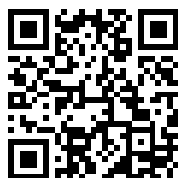

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, January, 1915—No. 1

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instructions, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the list of Radio Stations of the United States, and will contain information concerning Government, commercial, and special stations only. Information regarding amateur stations will appear only in the annual edition of the list of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the list of Radio Stations of the United States and the list of Radiotelegraph Stations, published by the international bureau at Bern, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) will be printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws will be printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

ABBREVIATIONS.

INTERNATIONAL ABBREVIATIONS USED IN THIS LIST.

Nature of service:

PG=General public.

PR=Limited public or limited commercial.

P=Private.

O=Government business exclusively.

Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m.

s=p. m.

12 m=Midday.

12 s=Midnight.

fr.=Franc (france).

c.=Cents.

OTHER ABBREVIATIONS.

Name =Name of station.

G. loc. =Geographical location (O=west longitude, N=north latitude).

Call =Radio call letters.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths.

Service=Nature of service.

Hours =Hours of operation.

Rates =Ship or coast charges in francs and dollars.

Notes =Refers to notes in the Berne list.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

Additions to the list of Radio Stations of the United States, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Longitude and latitude (approximate).	Call signal.	Range.	System.	Wave lengths.	Service.	Hours.
Benton Harbor, Mich. ¹	O 86 28 21 N 42 06 42	WIZ	125	Marconi, 125...	300, 500, 600	PR ² ...	X.
Huntington Harbor, Northport, N. Y. ³	.....	WLM	.....	.....	.....	.....	.....
Oakland, Cal. ⁴ ...	O 122 16 14 N 37 48 41	KGI	200	Composite, 540	300, 500, 600	P.....	X.
Passagrille, Fla. ⁵	O 82 45 00 N 27 42 00	WRG	20	.....	300, 450, 600	PG ⁶ ...	8.30m-11.30m. 1.30s- 3.00s. 4.30s- 6.30s. 7.30s-10.00s.
St. Petersburg, Fla. ⁷	O 82 38 27 N 27 46 28	WIX	25-50	.....	300, 450, 600	PR ⁸ ...	8.30m-11.30m. 1.30s- 3.00s. 4.30s- 6.30s. 7.30s-10.00s.

¹ Radio station operated and controlled by the Graham & Morton Transportation Co.² The vessel communicates only with vessels of the Graham & Morton Transportation Co.³ Radio station operated and controlled by W. K. Vanderbilt, jr.⁴ Radio station operated and controlled by Ellery W. Stone.⁵ Radio station operated and controlled by C. A. Brown.⁶ The station also communicates with a land station at St. Petersburg (WIX), Fla. The rates for this station are as follows:

	Per word.	Minimum per radiogram.
Ordinary day messages.....	2 c. (0.10 fr.)	(10 words) 35 c. (1.75 fr.)
Ordinary night messages.....	2 c. (0.10 fr.)	(10 words) 25 c. (1.25 fr.)
Day letters.....	4 c. (0.20 fr.)	(50 words) 55 c. (2.75 fr.)
Night letters.....	2 c. (0.10 fr.)	(50 words) 35 c. (1.75 fr.)

⁷ Radio station operated and controlled by C. C. Brown.⁸ The station is limited to correspondence with a land station at Passagrille (WRG), Fla. Rates for this station same as Passagrille (no ship service).

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the list of Radio Stations of the United States, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Name.	Call signal.	System.	Wave lengths.	Ship rate.	
				Per word.	Minimum per radiogram.
Addison E. Bullard ¹	KWL		300, 600		
Alberta ²	KZA				
Baton Rouge ³	KSG		300, 600		
Bayway ⁴	KSR		300, 600		
Brockton ⁴	KNH		300, 600		
Caddo ⁵	KSK		300, 600		
Caloria* ⁶	KSP	Marconi.	300, 600	4 c. (0.20 fr.)	40 c. (2 fr.)
Charles E. Harwood* ⁶	WID	do.	300, 600	4 c. (0.20 fr.)	40 c. (2 fr.)
Charlton Hall ⁶	KLU		300, 600		
Colusa* ⁷	WIN	Marconi.	300, 600	4 c. (0.20 fr.)	40 c. (2 fr.)
Craster Hall ⁶	KLK		300, 600		
Cushing (KSC) ⁸	KSC		300, 600		
De Soto ⁹	KNI		300, 600		
Edward L. Doheny* ⁹	WIE		300, 600	4 c. (0.20 fr.)	40 c. (2 fr.)
Emeline ⁸	KZD				
Francis Hanify* ⁹	KRA	Marconi, 1,000.	300, 600	4 c. (0.20 fr.)	40 c. (2 fr.)
Gargoyle ¹⁰	KRK		300, 600		
Great Northern* ¹¹	WIR	Marconi, 1,000.	300, 600	4 c. (0.20 fr.)	40 c. (2 fr.)
Herbert G. Wylie* ⁹	WIF	Marconi.	300, 600	4 c. (0.20 fr.)	40 c. (2 fr.)
Howick Hall* ⁶	KLK	do.	300, 600	4 c. (0.20 fr.)	40 c. (2 fr.)
Llama* ²	KSI	do.	300, 600	4 c. (0.20 fr.)	40 c. (2 fr.)
Lyman Stewart ¹²	WTL		300, 600		
Maracas* ¹³	KMR	Marconi.	300, 600		
Motano ³	KSB		300, 600		
Norman Bridge* ⁵	WIG	Marconi.	300, 600	4 c. (0.20 fr.)	40 c. (2 fr.)
Olson & Mahony† ¹⁴	WIK	Composite, 375.	300, 600	2 c. (0.10 fr.)	20 c. (1 fr.)
Princeton (KST) ¹⁰	KST		300, 600		
Sandy Hook ¹⁵	KNJ		300, 600		
Santa Clara (KIR) ¹⁶	KIR		300, 600		
Somerset (KSU) ¹⁰	KSU		300, 600		
Tarantula ¹⁷	KZT				
Winchester* ¹⁸	KZK				

*Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.

†Radio station operated and controlled by the Golden Gate Transportation Co.

¹ J. B. Crocker, owner of vessel.

² F. D. Bourne, owner of vessel.

³ Standard Oil Co. of New Jersey, owner of vessel.

⁴ Colonial Navigation Co., owner of vessel.

⁵ Petroleum Transport Co., owner of vessel.

⁶ United States Steel Products Co., owner of vessel.

⁷ W. R. Grace & Co., owner of vessel.

⁸ Robert Graves, owner of vessel.

⁹ G. R. Hanify & Co., owner of vessel. The station has a range of 100 miles, general public service, with no regular hours.

¹⁰ Vacuum Oil Co., owner of vessel.

¹¹ Great Northern Pacific Steamship Co., owner of vessel. The station has a range of 150 miles, general public service, with continuous hours.

¹² Union Oil Co. of California, owner of vessel.

¹³ New York Transatlantic Steamship Co. (Inc.), owner of vessel.

¹⁴ Olson & Mahony, owner of vessel. The station has a range of 200 miles, general public service, with no regular hours.

¹⁵ United New York & Sandy Hook Pilot's Association, owner of vessel.

¹⁶ American & Cuban Steamship Line, owner of vessel.

¹⁷ W. K. Vanderbilt, jr., owner of vessel.

¹⁸ Irving Cox, owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Station.	Call signal.	Station.
KGI	Oakland, Cal.....c	KSU	Somerset.....b
KIR	Santa Clara.....b	KWL	Addison E. Bullard.....b
KLK	Craster Hall.....b	KZA	Alberta.....b
KLT	Howick Hall.....b	KZD	Emeline.....b
KLU	Charlton Hall.....b	KZK	Winchester.....b
KMR	Maracas.....b	KZT	Tarantula.....b
KNH	Brockton.....b	WID	Charles E. Harwood.....b
KNI	De Soto.....b	WIE	Edward L. Doheny.....b
KNJ	Sandy Hook.....b	WIF	Herbert G. Wylie.....b
KRA	Francis Hanify.....b	WIG	Norman Bridge.....b
KRK	Gargoyle.....b	WIK	Olson & Mahony.....b
KSB	Molano.....b	WIN	Colusa.....b
KSC	Cushing.....b	WIR	Great Northern.....b
KSG	Baton Rouge.....b	WIX	St. Petersburg, Fla.....c
KSI	Llama.....b	WIZ	Benton Harbor, Mich.....c
KSK	Caddo.....b	WLM	Huntington Harbor, Northport, N. Y..c
KSP	Caloria.....b	WRG	Passagrille, Fla.....c
KSR	Bayway.....b	WTL	Lyman Stewart.....b
KST	Princeton.....b		

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the list of Radio Stations of the United States only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Montgomery, Ala.....	5ZI	300, 600, 1625, 1800.....	P	X	Wm. H. Amerine (Signal Corps, Ala. Nat. Guard).
Pacific Grove, Cal.....	6ZB	300, 500, 600.....	P	X	Howard S. Bunting.
Richmond, Va.....	3ZK	500, variable.....	P	X	Frank S. Splatt (Signal Corps, Va. Nat. Guard).
Schenectady, N. Y.....	2XA	300, 600, 1000, 1200, 1700.	P	X	E. M. Kinney.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
2XA	Second district: Schenectady, N. Y.	5ZI	Fifth district: Montgomery, Ala.
3ZK	Third district: Richmond, Va.	6ZB	Sixth district: Pacific Grove, Cal.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the list of Radio Stations of the United States, and in the International List of Radiotelegraph Stations published by the Berne bureau.]

ASTORIA, OREG.—Rates, North and South American service, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram.

AVALON, CAL.—W. L., 300, 527, 600.

BALBOA, PANAMA.—Rates, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram.

BALTIMORE, MD.—Range, 125.

BOSTON (WBF), MASS.—Range, 200; system, Marconi, 218.

BROOKLYN, N. Y.—System, Fessenden, 250-1000; W. L., 300, 600, 1650, 1800, 2600, 3600; service, PG and PR; hours, 4m-12m, 1s-9s; rates, North and South American service, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram; transoceanic service, 12 c. (0.60 fr.) per word, \$1.20 (6 fr.), minimum, per radiogram; ships plying between New York City and points distant not more than 200 miles by water, 3 c. (0.15 fr.) per word, 30 c. (1.50 fr.), minimum, per radiogram. Strike out Note.

BUFFALO, N. Y.—Range, 185; system, Marconi, 50; hours, Apr. 15-June 3, 7s-12s, 1m-7m; June 3-Sept. 15, 7m-12m, 1s-6s, 7s-12s, 1m-6m; Sept. 15-Dec. 15, 7s-12s, 1m-7m.

BURRWOOD, LA.—Range, 400; system, composite, 500; W. L., 300, 600, 1650, 1800; service, PG and PR; hours, 7m-7.05m, 9m-9.05m, 11m-11.05m, 2s-2.05s, 4s-4.05s, 7s-7.05s; rates, PG service, 12 c. (0.60 fr.) per word, \$1.20 (6 fr.), minimum, per radiogram, PR service to New Orleans (WNU), La., 5 c. (0.25 fr.) per word, without minimum. Notes, Station also corresponds with a station at Cape San Antonio, Cuba, and one at New Orleans (WNU), La. The operator listens in at intermittent times on the hour and half hour.

CALUMET, MICH.—Range, 150; system, Marconi, 120; W. L., 300, 600; service, PG; hours, 8m-1s, 2s-7s, 8s-1m, 2m-7m; rates, 3 c. (0.15 fr.) per word, 30 c. (1.50 fr.), minimum, per radiogram.

CAPE BLANCO, OREG.—Rates, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum per radiogram.

CAPE HATTERAS, N. C.—Range, 200; system, Marconi, 240.

CAPE MAY, N. J.—System, Marconi, 240.

CHICAGO, ILL.—Range, 150; system, Marconi, 120.

CLEVELAND, OHIO.—Range, 150; system, Marconi, 120; hours, 9m-12m, 12.30s-8s, 9s-11s, 12s-8m.

COLON, PANAMA.—Rates, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram.

DAVAO, P. I.—Note, Radio station operated and controlled by the Philippine insular government.

DETROIT, MICH.—G. loc., O 83° 07' 15", N 42° 15' 17"; system, Marconi, 120.

DOUGLAS, ARIZ.—System, Marconi, 480.

DULUTH, MINN.—Range, 150; system, Marconi, 120; hours, 8m-12m, 1s-7s, 8s-12s, 1m-7m.

EAST SAN PEDRO, CAL.—System, Marconi, 235; rates, North and South American service, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram, transoceanic service, 12 c. (0.60 fr.) per word, \$1.20 (6 fr.), minimum, per radiogram, to ships *Hermosa* and *Cabrillo*, 2 c. (0.10 fr.) per word, 20 c. (1 fr.), minimum, per radiogram (address and signature free of charge), for radiotelegrams exchanged with Avalon, Catalina Island, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.

EL PASO, TEX.—Notes, The station is reserved for limited public service overland with Fort Worth, Tex., Los Angeles (KLS), and South San Francisco, Cal. The station applies special zone rates, which may be obtained upon application to the Federal Telegraph Co.

ENSENADA, P. R.—G. loc. (approximate), O 66° 57' 00", N 17° 59' 00"; range, 250; system, Marconi, 240; W. L., 300, 600, 1610; service, PG and PR; hours, week days, 8m-6s, Sundays, 9m-12m; rates, to ships, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram; to San Domingo City, La Romana, and San Pedro Macoras, 12 c. (0.60 fr.) per word, without minimum.

EUREKA (NPW), CAL.—Rates, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram.

- EUREKA (KPM), CAL.**—Rates, North and South American service, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram, transoceanic service, 12 c. (0.60 fr.) per word, \$1.20 (6 fr.), minimum, per radiogram.
- FORT MILLS, P. I.**—Service, PG.
- FORT MORGAN, ALA.**—Service, PG and PR; hours, PG service, 7.10m-7.20m, 7.40m-7.50m, 8.10m-8.20m, 8.40m-8.50m, 9.10m-9.20m, 10.10m-10.20m, 10.40m-10.50m, 11.10m-11.20m, 11.40m-11.50m, 12.10s-12.20s, 2.10s-2.20s, 2.40s-2.50s, 3.10s-3.20s, 3.40s-3.50s, 4.10s-4.20s, 4.40s-4.50s, 5.10s-5.20s, 5.40s-5.50s, 6.10s-6.20s; PR service, 7.00m-7.10m, 7.30m-7.40m, 8.00m-8.10m, 8.30m-8.40m, 9.00m-9.10m, 10.00m-10.10m, 10.30m-10.40m, 11.00m-11.10m, 11.30-11.40, 12.00m-12.10s, 2.00s-2.10s, 2.30s-2.40s, 3.00s-3.10s, 3.30s-3.40s, 4.00s-4.10s, 4.30s-4.40s, 5.00s-5.10s, 5.30s-5.40s, 6.00s-6.10s; rates, to ships, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram; PR service with Mobile, Ala., 10 c. (0.50 fr.) per word, \$2 (10 fr.), minimum, per radiogram. Note, The station also corresponds with Mobile, Ala.
- FRANKFORT, MICH.**—System, Marconi, 120; service, PG; hours, 8m-12m, 1s-7s; rates, 3 c. (0.15 fr.) per word, 30 c. (1.50 fr.), minimum, per radiogram. Strike out Notes.
- FRIDAY HARBOR, WASH.**—System, Marconi, 120; rates, North and South American service, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram, transoceanic service, 12 c. (0.60 fr.) per word, \$1.20 (6 fr.), minimum, per radiogram.
- GALVESTON, TEX.**—System, Marconi, 400.
- GRAND HAVEN, MICH.**—Service, PG; hours, 7m-12m, 8s-11s. Strike out Note.
- GRAND MARAIS, MINN.**—System, Marconi, 120; service, PG. Strike out Note.
- GUANTANAMO BAY, CUBA.**—Rates, 6 c. (0.30-fr.) per word, 60 c. (3 fr.), minimum, per radiogram.
- HEEIA POINT, HAWAIIAN ISLANDS.**—Note, The station communicates only with south San Francisco, Cal.; minimum, per radiogram, 75 c. (3.75 fr.), special count.
- HILLCREST (DALY CITY), CAL.**—System, Marconi, 120; rates, North and South American service, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram, transoceanic service, 12 c. (0.60 fr.) per word, \$1.20 (6 fr.), minimum, per radiogram.
- HOLLISTER, CAL.**—System, composite, 466. Strike out Note.
- HULL, MASS.**—G. loc., O 70° 54' 00'', N 48° 18' 22''; range, 100; system, composite, 1,000.
- JACKSONVILLE, FLA.**—G. loc., O 81° 38' 56'', N 30° 19' 25''; range, 150.
- KEY WEST, FLA.**—Rates, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram.
- LOS ANGELES (KEX), CAL.**—System, Marconi, 120.
- LUDINGTON, MICH.**—System, Marconi, 120; hours, 12.30m-6m, 7.30m-11.30m, 1s-5.30s, 7.30s-11.30s, when lake is open to navigation. Strike out Notes.
- MACKINAC ISLAND, MICH.**—G. loc. (approximate), O 84° 35' 00'', N 45° 54' 00''; range, 150; system, Marconi, 120; W. L., 600; service, PG; hours, 8m-12m, 2s-5s, 8s-9s; rates, 3 c. (0.15 fr.) per word, 30 c. (1.50 fr.), minimum, per radiogram.
- MANISTIQUE, MICH.**—Range, 125; system, Marconi, 240; W. L., 300, 600; service, PG; hours, 8m-11m, 2s-5s, 7s-9s; rates, 3 c. (0.15 fr.) per word, 30 c. (1.50 fr.), minimum, per radiogram.
- MANITOWOC, WIS.**—Range, 125.
- MARSHFIELD, OREG.**—System, Marconi, 120; rates, North and South American service, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram, transoceanic service, 12 c. (0.60 fr.) per word, \$1.20 (6 fr.), minimum, per radiogram.
- MIAMI, FLA.**—Range, 300; system, Marconi, 240; W. L., 300, 550, 600.
- MILWAUKEE, WIS.**—Hours, 1.30m-7m, 8m-12m, 1s-6s, 8s-12.30m. Strike out Notes.
- MOBILE, ALA.**—Service, PG and PR; hours, PG service, 7.10m-7.30m, 7.40m-8.00m, 8.10m-8.30m, 8.40m-9.00m, 10.10m-10.30m, 10.40m-11.00m, 11.10m-11.30m, 11.40m-12m, 2.10s-2.30s, 2.40s-3.00s, 3.10s-3.30s, 3.40s-4.00s, 4.10s-4.30s, 4.40s-5.00s, 5.10s-5.30s, 5.40s-6.00s; PR service, 7.00m-7.10m, 7.30m-7.40m, 8.00m-8.10m, 8.30m-8.40m, 9.00m-9.10m, 10.00m-10.10m, 10.30m-10.40m, 11.00m-11.10m, 11.30m-11.40m, 12m-12.10s, 2.00s-2.10s, 2.30s-2.40s, 3.00s-3.10s, 3.30s-3.40s, 4.00s-4.10s, 4.30s-4.40s, 5.00s-5.10s, 5.30s-5.40s, 6.00s-6.10s; rates, for service with ships, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram; PR service with Fort Morgan, Ala., 10 c. (0.50 fr.) per word, \$2 (10 fr.), minimum, per radiogram. Note, Station also corresponds with Fort Morgan, Ala.
- NEW LONDON (WLC), CONN.**—Range, 100; system, Fessenden, 120.
- NEW ORLEANS (WHK), LA.**—G. loc. (approximate), O 90° 07' 00'', N 29° 59' 00''; range, 200; system, Marconi, 400.

NEW ORLEANS (WNU), LA.—Range, 400; system, composite, 1000; W. L., 300, 600, 1800, 1850; service, PG, PR, and P; hours, N; rates, for service with ships, 12 c. (0.60 fr.) per word, \$1.20 (6 fr.), minimum, per radiogram. PR service rates (charges per word, cable count, no minimum), as follows:

	Francs.	Cents.
Belize, British Honduras.....	0.875	17.5
Bluefields, Nicaragua.....	1.125	22.5
Bocas del Toro, Panama.....	1.375	27.5
Burwood, La.....	.25	5.0
Ceiba, Spanish Honduras.....	1.25	25.0
Colon, Panama.....	1.00	20.0
Port Limon, Costa Rica.....	1.25	25.0
Puerto Barrios, Guatemala.....	1.125	22.5
Puerto Cortez, Spanish Honduras.....	1.125	22.5
Santa Marta, Colombia.....	1.875	37.5
Swan Island.....	.625	12.5
Tela, Spanish Honduras.....	1.125	22.5
Truxillo, Spanish Honduras.....	1.125	22.5

NEWPORT (WCI), R. I.—System, Fessenden, 260.

NEWTON, MASS.—System, Clapp-Eastham, 2000; service, P.

NEW YORK (WHB).—System, Wireless Specialty Apparatus Co., 1000; rates, North and South American service, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram, transoceanic service, 12 c. (0.60 fr.) per word, \$1.20 (6 fr.), minimum, per radiogram.

NEW YORK (WNT).—Range, 150; system, Telefunken, 1000; hours, 9m–5s, except Sundays and holidays.

NORTH HEAD, WASH.—Rates, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram.

PHILADELPHIA (WHE), PA.—System, Marconi-United, 240; W. L., 300, 600, 1650; hours, 8m–12s.

POINT ARGUELLO, CAL.—Rates 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram.

PORT ARTHUR, TEX.—G. loc., O 93° 55' 35'', N 29° 52' 46''; system, Marconi, 400.

SAN DIEGO (NPL), CAL.—Rates, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram.

SAN JUAN, P. R.—Rates, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram.

SAN LUIS OBISPO, CAL.—G. loc. (approximate), O 120° 45', 00'', N 35° 10' 00''; range, 150; system, Marconi, 240; rates, North and South American service, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram, transoceanic service, 12 c. (0.60 fr.) per word, \$1.20 (6 fr.), minimum, per radiogram.

SAVANNAH, GA.—Range, 200; system, Marconi-United, 240; W. L., 300, 500, 600.

SAYVILLE, N. Y.—Strike out all particulars regarding limited public-service station.

SAYVILLE, N. Y. (PG station).—Hours, 2m–2s.

SEATTLE, WASH.—Range, 200; system, Marconi, 120; rates, North and South American service, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram, transoceanic service, 12 c. (0.60 fr.) per word, \$1.20 (6 fr.), minimum, per radiogram.

SIASCONSET, MASS.—System, Marconi, 480.

SOUTH SAN FRANCISCO, CAL.—Note, Station reserved for correspondence with El Paso, Tex., and Heeia Point (near Honolulu), Hawaiian Islands. Rates, 75 c. (3.75 fr.) per radiogram, special count.

SOUTH WELFLEET, MASS.—System, Marconi, 120–233; W. L., 300, 600, 2100; rates, North and South American service, 6 c. (0.30 fr.), per word, 60 c. (3 fr.), minimum, per radiogram, transoceanic service, 12 c. (0.60 fr.) per word, \$1.20 (6 fr.), minimum, per radiogram, distances exceeding 400 miles, 42 c. (2.10 fr.) per word, \$4.20 (21 fr.), minimum, per radiogram.

TAMPA, FLA.—System, Marconi, 400.

TATOOSH, WASH.—Rates, 6 c. (0.30 fr.) per word, 60 c. (3 fr.), minimum, per radiogram.

TUTUILA, SAMOA.—Rates, 5 c. (0.25 fr.) per word, 50 c. (2.50 fr.), minimum, per radiogram.

VIRGINIA BEACH, VA.—System, Marconi, 240; W. L., 300, 550, 600.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made in the list of Radio Stations of the United States, and in the International List of Radiotelegraph Stations published by the Berne bureau.]

- ABANGAREZ.**—Range, 500; system, Wireless Specialty Apparatus Co., 1000; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- ADELINE SMITH.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Note, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.
- ADMIRAL DEWEY.**—System, Marconi, 240; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram; hours, N.
- ADMIRAL EVANS.**—System, Marconi; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- ADMIRAL FARRAGUT.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram. Note, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.
- ADMIRAL SAMPSON.**—Strike out all particulars.
- ADMIRAL SCHLEY.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- ADMIRAL WATSON.**—Range, 150; system, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- ADVANCE.**—Range, 300; system, Telefunken, 1000.
- A. G. LINDSAY.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Note, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.
- ALABAMA (KSX).**—Strike out all particulars.
- ALABAMA (KUN).**—Range, 200; system, Marconi, 240; hours, X; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- ALABAMA (WFB).**—Range, 150; system, Marconi, 120.
- ALAMEDA.**—Range, 200; system, Marconi, 120; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- ALAMO.**—System, Marconi, 400.
- ALASKAN.**—Range, 200; system, Telefunken, 1000; hours, 9m–12m, 2s–5s, 8s–10.30s; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- ALBATROSS.**—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- ALBONQUIN (KVG).**—System, Marconi, 120.
- AL-KI.**—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram. Note, Northland Steamship Co., owner of vessel.
- ALLIANÇA.**—Range, 300; system, Telefunken, 1000; W. L., 300, 450, 600. Note, Radio station operated and controlled by the Atlantic Communication Co.
- ALLIANCE.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Note, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.
- AMERICAN.**—Range, 200; system, Telefunken, 1000; hours, 9m–12m, 2s–5s, 8s–10.30s; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- ANCON.**—Range, 300; system, Telefunken, 1000; W. L., 300, 400, 500, 600.
- ANN ARBOR, No. 3.**—Range, 125; system, Marconi, 120; hours, N.
- ANN ARBOR, No. 4.**—Range, 125; system, Marconi, 120; hours, N.
- ANN ARBOR, No. 5.**—Range, 125; system, Marconi, 120; hours, N.
- ANTILLES.**—System, Marconi, 120.
- APACHE (KVA).**—System, Marconi, 250.
- ARAPAHOE.**—System, Marconi, 400.
- ARGYLL (WTB).**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Note, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.

- ARIZONA.**—Range, 150; system, Marconi, 120; hours, X.
- ARIZONAN.**—Range, 350; system, Telefunken, 1000; hours, 9m-12m, 2s-5s, 8s-10.30s; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- AROLINE.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- ASHTABULA.**—Range, 125; system, Marconi, 240.
- ASTRAL.**—Note, Standard Oil Co. of New York, owner of vessel.
- ASUNCION (WTX).**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram. Note, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.
- ATENAS.**—Range, 500; system, composite, 1000; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- ATLANTIC.**—Range, 200; system, Marconi, 240; hours, X.
- ATLAS (WTT).**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram. Note, Standard Oil Co. of California, owner of vessel.
- AZTEC.**—System, Marconi, 240; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- BAY STATE.**—Range, 300.
- BEAR (WWD).**—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- BEAVER (WWB).**—Range, 200; system, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- BELFAST.**—Range, 200; system, Marconi, 120.
- BERKSHIRE.**—System, Marconi-United, 240.
- BERLIN (WRB).**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Note, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.
- BORINQUEN.**—Strike out system. Strike out notes.
- BRAZOS.**—System, Marconi, 240.
- BREAKWATER.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Note, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.
- BRILLIANT (KTI).**—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of New York, owner of vessel.
- BRINDILLA.**—Note, Standard Oil Co. of New Jersey, owner of vessel.
- BRUNSWICK.**—System, Marconi, 240.
- BUFFALO (NBU).**—Call, NCU.
- CABRILLO.**—Range, 150; system, Marconi, 120; hours, X; rates, San Pedro-Avalon ferry service, 1 c. (0.05 fr.) per word, 10 c. (0.50 fr.), minimum, per radiogram.
- CALIFORNIA (KYQ).**—Note, Mrs. Clara B. Stocker, owner of vessel (yacht).
- CALVIN AUSTIN.**—Range, 200; system, Marconi, 120.
- CAMDEN.**—Range, 200; system, Marconi, 120.
- CAMINO.**—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- CAPTAIN A. F. LUCAS.**—Range, 200; system, Marconi, 120; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- CARACAS.**—System, Marconi, 120.
- CARLOS.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- CAROLINA (WFE).**—Range, 150; system, Marconi, 120; hours, N; rates, 2 c. (0.10 fr.) per word, 20 c. (1 fr.), minimum, per radiogram.
- CARTAGO.**—Range, 500; system, Wireless Specialty Apparatus Co., 1000; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.

- CATANIA.**—Strike out all particulars.
- CELIO.**—System, Marconi, 120; service, PG; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- CENTRALIA.**—System, Marconi, 120; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- CHALMETTE.**—System, Marconi, 400.
- CHEROKEE.**—System, Marconi, 400.
- CHICAGO (WAC).**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Note, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.
- CHICAGO (WFI).**—Range, 150; system, Marconi, 120; W. L., 300, 600; service, PG; hours, N; rates, 2 c. (0.10 fr.) per word, 20 c. (1 fr.), minimum, per radiogram. Note, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.
- CHINA (WWA).**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- CHRISTOPHER COLUMBUS.**—Range, 150; system, Marconi, 120; hours, N; rates, 2 c. (0.10 fr.) per word, 20 c. (1 fr.), minimum, per radiogram.
- COAMO.**—System, Marconi, 400.
- COL. E. L. DRAKE.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of California, owner of vessel.
- COL. JAMES M. SCHOONMAKER.**—Range, 150; system, Marconi, 120.
- COLON.**—System, Telefunken, 1000; W. L., 300, 450, 600.
- COLUMBIA (KYM).**—System, Telefunken, 1000.
- COLUMBIA (WHC).**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- COLUMBIAN (WKS).**—Range, 200; system, Telefunken, 1000; hours, 9m-12m, 2s-5s, 8s-10.30s, rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- COMAL.**—System, Marconi, 400.
- COMANCHE.**—System, Marconi, 400.
- COMET (KTJ).**—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of New York, owner of vessel.
- COMUS (KKD).**—System, Marconi, 120.
- CONCHO.**—System, Marconi, 120.
- CONGRESS.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- COPPENNAME.**—Range, 350; system, Wireless Specialty Apparatus Co., 1000; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- CORDOVA.**—System, Marconi, 120; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- CORONADO.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Coronado Co., owner of vessel.
- CREOLE.**—System, Marconi, 400.
- CRETAN.**—System, Marconi-United, 120.
- CRISTOBAL.**—Range, 300; system, Telefunken, 1000; W. L., 300, 450, 600.
- CYPRUS.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Daniel C. Jackling, owner of vessel (yacht).
- CITY OF ALPENA II.**—Range, 125; system, Marconi, 120; hours, X.
- CITY OF ANNAPOLIS.**—Strike out all particulars.
- CITY OF AUGUSTA.**—System, Marconi, 120.
- CITY OF BALTIMORE.**—Strike out all particulars.
- CITY OF BANGOR.**—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, X; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Eastern Steamship Corporation, owner of vessel.

- CITY OF BENTON HARBOR.—Range, 150; system, Marconi, 120; hours, N; rates, 2 c. (0.10 fr.) per word, 20 c. (1 fr.), minimum, per radiogram.
- CITY OF BUFFALO.—Range, 100; system, Marconi, 120.
- CITY OF CHICAGO.—Range, 125; system, Marconi, 120; hours, N; rates, 2 c. (0.10 fr.) per word, 20 c. (1 fr.), minimum, per radiogram.
- CITY OF CLEVELAND III.—Range, 125; system, Marconi, 240. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Detroit & Cleveland Navigation Co., owner of vessel.
- CITY OF COLUMBUS.—System, Marconi, 240.
- CITY OF DETROIT II.—Range, 125; system, Marconi-United, 120.
- CITY OF DETROIT III.—Range, 125; system, Marconi, 120.
- CITY OF ERIE.—System, Marconi, 240; hours, X.
- CITY OF EVERETT.—Note, Standard Oil Co. of New York, owner of vessel.
- CITY OF GRAND RAPIDS.—Range, 125; system, Marconi, 120; hours, N; rates, 2 c. (0.10 fr.) per word, 20 c. (1 fr.), minimum, per radiogram.
- CITY OF MACKINAC II.—Range, 125; system, Marconi, 120; hours, X.
- CITY OF MONTGOMERY.—System, Marconi, 120.
- CITY OF NORFOLK.—Strike out all particulars.
- CITY OF PARA.—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- CITY OF PUEBLA.—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- CITY OF RICHMOND.—Strike out all particulars.
- CITY OF ROCKLAND.—Range, 200; system, Marconi, 120.
- CITY OF St. IGNACE.—Range, 125; system, Marconi, 120; hours, X.
- CITY OF St. LOUIS.—System, Marconi, 400.
- CITY OF SAVANNAH.—System, Marconi, 400.
- CITY OF SEATTLE.—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- CITY OF SYDNEY.—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- CITY OF TOPEKA.—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.), per word, 80 c. (4 fr.), minimum, per radiogram.
- DAKOTAN.—System, Marconi, 480.
- DAMARA.—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Edgar F. Luckenbach, owner of vessel.
- DELAWARE SUN.—Range, 250; system, Marconi, 120; hours, 8m-12m; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- DELEH.—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- DENVER (KED).—System, Marconi, 120.
- DOLPHIN (WAU).—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- DORA.—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Alaska Steamship Co., owner of vessel.
- DORCHESTER.—Range, 200; system, Marconi-United, 120.
- DOROTHY BRADFORD.—Range, 200.
- EASTERN STATES.—Range, 125; system, Marconi, 240.
- EASTLAND.—Range, 100; system, Marconi-United, 120.
- EDGAR H. VANCE.—Range, 150; system, Marconi, 1000; W. L., 300, 600; service, PG; hours, X; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Hammond Lumber Co., owner of vessel.
- EL ALBA.—System, Marconi, 480; hours, N.
- EL CID.—System, Marconi, 120.
- EL DIA.—System, Marconi, 120; hours, X.
- EL MUNDO.—System, Marconi, 120.
- EL OCCIDENTE.—System, Marconi, 400.
- EL ORIENTE.—System, Marconi, 400.
- EL RIO.—System, Marconi, 400.

- EL SEGUNDO.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of California, owner of vessel.
- EL SIGLO.**—System, Marconi, 120.
- EL SOL.**—System, Marconi, 400.
- EL SUD.**—System, Marconi, 1000.
- ENTERPRISE.**—System, Marconi, 240; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- EOCENE.**—Note, Radio station operated and controlled by the Standard Oil Co. of New York, owner of vessel.
- ERSKINE M. PHELPS.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. William D. Sewall (Union Oil Co.), owner of vessel.
- ESPERANZA.**—System, Marconi, 120.
- ESSEX (KQE).**—System, Marconi-United, 120.
- EXCELSIOR (KKO).**—System, Marconi, 400.
- F. A. KILBURN.**—Range, 150; system, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- FALCON (WRK).**—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- FAVORITE.**—Range, 100; system, Marconi, 120; hours, X; rates, 2 c. (0.10 fr.) per word, 20 c. (1 fr.), minimum, per radiogram.
- FIFIELD.**—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- FLORIDA (KSY).**—Strike out all particulars.
- FLORIDA (KUS).**—Range, 150; system, Marconi, 240; W. L., 300, 600; service, PG; hours, X; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- FRANK H. BUCK.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Associated Oil Co., owner of vessel.
- FRIEDA.**—System, Marconi, 480; hours, X.
- GENERAL HUBBARD.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Hubbard Steamship Co., owner of vessel.
- GENL. PETTIBONE.**—Note, Guyton & Co., owner of vessel.
- GEO. W. ELDER.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. North Pacific Steamship Co., owner of vessel.
- GEORGE W. FENWICK.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Fenwick Steamship Co. (California & Atlantic Steamship Co.), owner of vessel.
- GEORGIAN (WKG).**—Range, 200; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- GLORY OF THE SEAS.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Glacier Fisheries Co., owner of vessel.
- GLOUCESTER (KQG).**—System, Marconi-United, 120.
- GOVERNOR.**—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- GOVERNOR COBB.**—Range, 200; system, Marconi, 120.
- GOVERNOR DINGLEY.**—Range, 200; system, Marconi, 120; hours, N; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- GRACE DOLLAR.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.

- GRECIAN.**—Range, 150; system, Marconi, 240.
- GUARDIAN.**—Range, 200; system, Marconi, 240; hours, N; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- GULFOIL.**—Range, 200; system, Marconi, 240; hours, various from 6m-9s; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- GULFSTREAM.**—Range, 250; system, Marconi, 240; hours, 8m-12m; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- HAMILTON.**—System, Marconi, 140.
- HANALEI.**—Strike out all particulars.
- HARVARD.**—System, Poulsen arc. Strike out Rates. Notes, Radio station operated and controlled by the Federal Telegraph Co. Metropolitan Steamship Co. (Pacific Steam Navigation Co.), owner of vessel.
- HAVANA.**—System, Marconi, 120.
- HENRY M. FLAGLER.**—Range, 100; system, Marconi, 240; service, PG; hours, X; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Florida East Coast Railway Co., owner of vessel.
- HENRY T. SCOTT.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. California Steamship Co., owner of vessel.
- HEREDIA.**—Range, 500; system, composite, 1000; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- HILONIAN.**—Range, 200; system, Marconi, 120; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- HOLLAND (WDW).**—Range, 150; system, Marconi, 120; hours, N; rates, 2 c. (0.10 fr.) per word, 20 c. (1 fr.), minimum, per radiogram.
- HONOLULAN.**—Range, 250; system, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- HOWARD.**—System, Marconi-United, 120.
- HUMBOLDT.**—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- HURON.**—System, Marconi, 400.
- HYADES.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Matson Navigation Co., owner of vessel.
- IAQUA.**—System, Marconi, 230; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- ILLINOIS (WCZ).**—Range, 150; system, Marconi, 120.
- INDEPENDENT.**—System, Marconi; W. L., 300, 600; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Weiding & Independent Fisheries Co., owner of vessel.
- INDIAN (KQI).**—Range, 150; system, Marconi-United, 120.
- INDIANA (WFC).**—Range, 150; system, Marconi, 120.
- IOWA (WFD).**—Range, 150; system, Marconi, 120.
- IOWAN.**—Range, 250; system, Telefunken, 1000.
- IROQUOIS (KVF).**—Range, 200; system, Marconi, 400; W. L., 300, 600; service, PG; hours, N; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Clyde Steamship Co., owner of vessel.
- ISTHMIAN.**—Range, 200; system, Telefunken, 1000; hours, 9m-12m, 2s-6s, 8s-10.30s; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- J. A. CHANSLOR.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Associated Oil Co., owner of vessel.
- JAMESTOWN.**—System, Marconi, 120.
- J. B. STETSON.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- JEFFERSON (KOD).**—System, Marconi, 120.

- JEFFERSON (WAJ).**—System, Marconi, 120; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- J. M. GUFFEY.**—Range, 200; system, Marconi, 120; hours, various from 6m–9s; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- JOHN A. HOOPER.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- JOHN D. ARCHBOLD.**—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of New York, owner of vessel.
- JOHN D. ROCKEFELLER.**—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of New Jersey, owner of vessel.
- JUNIATA (KQJ).**—System, Marconi-United, 120.
- KERSHAW.**—System, Marconi-United, 120.
- KLAMATH.**—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- KOREA.**—Range, 250; system, Marconi, 240; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- LAKEPORT.**—Range, 100; system, Marconi, 240; W. L., 300, 600; service, PG; hours, X; rates, 2 c. (10 fr.), per word, 20 c. (1 fr.), minimum, per radiogram.
- LAMPASAS.**—System, Marconi, 120.
- LANSING.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- LARIMER.**—Range, 200; system, Marconi, 120; hours, various from 6m–9s; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- LATOCHE.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- LEELANAW.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- LEWIS LUCKENBACH.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Edgar F. Luckenbach (California & Atlantic Steamship Co.), owner of vessel.
- LEXINGTON (KNB).**—System, Fessenden, 260.
- LEXINGTON (KQL).**—Range, 150; system, Marconi-United, 240.
- LOUISE.**—Range, 75; system, Marconi-United, 120; W. L., 300, 600; service, PG; hours, 9m–11s. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Tolchester Beach Improvement Co., owner of vessel.
- LOUISIANA (KUL).**—Range, 200; system, Marconi, 240; hours, X; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- LURLINE.**—Range, 200; system, Marconi, 240; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- LYRA (WNF).**—Range, 200; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- MACKINAW.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- MADISON.**—System, Marconi, 120.
- MANCHURIA.**—Range, 250; system, Marconi, 240; hours, N; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- MANITOU (WFW).**—Range, 150; system, Marconi, 120.
- MANOA.**—Range, 200; system, Marconi, 240; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- MARACAIBO.**—System, Marconi, 120.
- MARIPOSA.**—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.

- MAROWLINE.**—Range, 350; system, Wireless Specialty Apparatus Co., 1000; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- MARQUETTE & BESSEMER No. 1.**—Range, 125; system, Marconi, 240.
- MARQUETTE & BESSEMER No. 2.**—Range, 125; system, Marconi, 240; hours, X.
- MASSACHUSETTS (KJM).**—Range, 200; system, Marconi, 120; hours, N; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Eastern Steamship Corporation, owner of vessel.
- MATSONIA.**—Range, 200; hours, N; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- MAVERICK.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of California, owner of vessel.
- MERRIMACK.**—System, Marconi-United, 120.
- MEXICAN.**—Range, 350; system, Telefunken, 1000; hours, 9m-12m, 2s-5s, 8s-10.30s; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- MEXICO (KWX).**—System, Marconi, 400.
- MILLINOCKET.**—System, Marconi, 120. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. A. H. Bull Steamship Co., owner of vessel.
- MINNESOTA (WEK).**—Range, 150; system, Marconi, 120; hours, N; rates, 2 c. (0.10 fr.) per word, 20 c. (1 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Lake Michigan Steamship Co., owner of vessel.
- MINNESOTA (WMI).**—Rate, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- MINNESOTAN.**—System, Marconi, 1000.
- MISSOURI (WFX).**—Range, 125; system, Marconi, 120; hours, N; rates, 2 c. (0.10 fr.) per word, 20 c. (1 fr.), minimum, per radiogram.
- MOHAWK (KVM).**—System, Marconi, 400.
- MOHAWK (NRM).**—Call in United States list should be NRM instead of NVM.
- MOHEGAN.**—System, Fessenden, 250.
- MOMUS.**—System, Marconi, 120.
- MONGOLIA.**—Range, 250; system, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- MONTEREY (KWY).**—System, Marconi, 400.
- MORRO CASTLE.**—System, Marconi, 120.
- MULTNOMAH.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Multnomah Steamship Co., owner of vessel.
- NACOOCHEE.**—System, Marconi, 120.
- NANN SMITH.**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- NANTUCKET.**—System, Marconi-United, 120.
- NAVAJO (WNJ).**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Western Steam Navigation Co. (California & Atlantic Steamship Co.), owner of vessel.
- NEBRASKAN.**—System, Telefunken, 1000; hours, 9m-12m, 2s-5s, 8s-10.30s.
- NELSON.**—Range, 200; system, Marconi, 480.
- NEMO.**—Range, 20; system, Wireless Improvement Co., 1000; hours, X. Notes, Radio station operated and controlled by Emil J. Simon. M. N. Liebmann, owner of vessel.
- NEVADAN.**—Range, 200; system, Telefunken, 1000; hours, 9m-12 m, 2s-5s, 8s-10.30s; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- NEWPORT (WWH).**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- NOME CITY.**—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.

- NORTH AMERICAN.**—Range, 150; system, Marconi, 480.
- NORHLAND (WNX).**—System, Marconi, rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. E. J. Dodge & Co., owner of vessel.
- NORTH LAND (WCN).**—System, Marconi, 120.
- NORTH LAND (KJD).**—System, Marconi, 120.
- NORTH STAR (KJS).**—System, Marconi, 120.
- NORTHWESTERN.**—System, Marconi, 120.
- NORTH WIND.**—System, Telefunken, 120.
- NORWOOD.**—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- NUECES.**—System, Marconi, 120.
- NEW HAVEN (KXN).**—System, Fessenden, 260.
- NEW JERSEY (KNJ).**—Strike out all particulars.
- OCEANA.**—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Bermuda-American Steamship Co., owner of vessel.
- OCTORARA.**—System, Marconi, 120.
- OLEUM.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Fillmore Condit (Union Oil Co.), owner of vessel.
- OLIVER J. OLSON.**—Range, 200; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- OLIVETTE.**—Range, 200; system, Marconi, 400.
- ONEONTA.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Port of Portland, owner of vessel.
- ONTARIO.**—System, Marconi-United, 120.
- PAMPANGA.**—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- PANAMA (KMH).**—Range, 300; system, Telefunken, 1000; W. L., 300, 450, 600.
- PAN-AMERICAN.**—Range, 150; system, Marconi, 400; W. L., 300, 600; service, PG; hours, X; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Texas Steamship Co., owner of vessel.
- PARAGUAY.**—Range, 150; system, Marconi-United, 120; W. L., 300, 600; service, PG.
- PARAISO.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- PARISMINA.**—Range, 500; system, composite, 1000; service, PG; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Tropical Radio Telegraph Co. Parismina Steamship Corporation, owner of vessel.
- PARTHIAN.**—Range, 150; system, Marconi-United, 120.
- PENNSYLVANIA (WWI).**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- PERE MARQUETTE.**—Range, 100; system, Marconi, 120; hours, N.
- PERE MARQUETTE 17.**—System, Marconi, 120; hours, N.
- PERE MARQUETTE 18.**—Range, 125; system, Marconi, 120.
- PERE MARQUETTE 19.**—System, Marconi, 120; hours, N.
- PERE MARQUETTE 20.**—Range, 125; system, Marconi, 120; W. L., 300, 600.
- PERFECTION.**—System, Marconi; W. L., 300, 600; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Note, Standard Oil Co. of New York, owner of vessel.
- PERSIAN.**—System, Marconi-United, 120.
- PERU (WWJ).**—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- PHILADELPHIA (KDA).**—System, Marconi, 400.
- PHILADELPHIA (KSM).**—Range, 200; system, Marconi, 240.
- PLEIADES.**—Range, 200; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- PLYMOUTH.**—System, Fessenden, 260.
- PONCE.**—System, Marconi, 400.
- PORTLAND.**—Range, 200; system, Marconi, 240; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.

POWHATAN (KQY).—System, Marconi-United, 120.

PRESIDENT.—Range, 200; system, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.

PRINCESS ANNE.—System, Marconi, 120.

PROTEUS (KKP).—System, Marconi, 120.

PROTEUS (NNG).—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.

PROVIDENCE.—System, Fessenden, 260.

PURITAN (WDU).—Range, 150; system, Marconi, 120.

QUEEN (WGX).—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.

RADIANT.—System, Marconi; strike out service and hours; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of New York, owner of vessel.

RAYO.—Note, Standard Oil Co. of New York, owner of vessel.

REDONDO.—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.

RELAY.—Range, 200; system, Marconi, 240; service, P; hours, N.

RELIEF LIGHTSHIP 66 OR 85.—Service, PG; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.

RELIEF LIGHTSHIP 71 OR 72.—Service, PG; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.

RELIEF LIGHTSHIP 94 OR 53.—Service, PG; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.

REUCE.—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Columbia River Packers' Association, owner of vessel.

RICHMOND.—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of California, owner of vessel.

RIO GRANDE (KEG).—System, Marconi, 400.

ROANOKE.—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.

ROMA (WTE).—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Union Steamship Co. (Union Oil Co.), owner of vessel.

ROSE CITY.—Range, 200; system Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.

SABINE.—System, Marconi, 400.

SAN JACINTO.—System, Marconi, 460.

SAN JOSE.—Range, 200; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.), per word, 80 c. (4 fr.), minimum, per radiogram.

SAN JUAN (KGJ).—System, Marconi, 120.

SAN JUAN (WWM).—Range, 200; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.

SAN MARCOS.—System, Marconi, 120.

SAN RAMON.—System, Marconi, 240; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.

SANTA ANA.—Rate, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Alaska Steamship Co., owner of vessel.

SANTA CATALINA.—Strike out all particulars.

SANTA CECILIA.—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.

SANTA CLARA (WBA).—Range, 200; system, Marconi, 240; hours, N; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.

SANTA CLARA (WRS).—System, Marconi, 120; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.

- SANTA CRUZ (WBD).**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Atlantic & Pacific Steamship Co., owner of vessel.
- SANTA MARIA (WTF).**—Range, 200; system, Marconi, 120; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- SANTA RITA (WTG).**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. United Steamship Co. (Union Oil Co.), owner of vessel.
- SANTANTA.**—Range, 30; system, Clapp-Eastham, 900; service, P; hours, X.
- SARATOGA (KWS).**—System, Marconi, 120.
- SATELLITE (KPS).**—Range, 30; system, composite, 120; service, PG; hours, X; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Note, Radio station operated and controlled by Alfred S. Sorenson & Sons, owners of vessel.
- SEEBANDBEE.**—Range, 150; system, Marconi, 120.
- SEGURANCA.**—System, Marconi, 400. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. New York & Cuba Mail Steamship Co. (Ward Line), owner of vessel.
- SEMINOLE (KVJ).**—System, Marconi, 120.
- SENATOR.**—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- SENATOR BAILEY.**—Strike out all particulars.
- SEWARD.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Alaska Steamship Co., owner of vessel.
- SHENANGO (KTC).**—Range, 150; system, Marconi, 120; hours, various from 6m–9s; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- SHENANGO (WET).**—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- SIBERIA.**—Range, 250; system, Marconi, 240; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- SIERRA.**—Strike out range, system, and rates. Note, Oceanic Steamship Co., owner of vessel.
- SOCONY.**—Note, Standard Oil Co. of New York, owner of vessel.
- SOMERSET (KQS).**—System, Marconi-United, 120.
- SONOMA (WHM).**—Range, 250; system, Marconi, 240; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- SOUTH AMERICAN (KVW).**—Range, 150; system, Marconi, 240; hours, X; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- SOUTH AMERICAN (WEO).**—Range, 125; system, Marconi, 120; hours, N; rates, 2 c. (0.10 fr.) per word, 20 c. (1 fr.), minimum, per radiogram.
- SPEEDWELL.**—Range, 100; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- SPOKANE.**—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- S. O. Co. No. 91.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of California, owner of vessel.
- S. O. Co. No. 92.**—Note, Standard Oil Co. of New York, owner of vessel.
- S. O. Co. No. 93.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of California, owner of vessel.
- S. O. Co. No. 94.**—Note, Standard Oil Co. of New York, owner of vessel.
- S. O. Co. No. 95.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of California, owner of vessel.
- STANLEY DOLLAR.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Dollar Steamship Line, owners of vessel.

- STARR.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. San Juan Fishing & Packing Co., owner of vessel.
- STATE OF OHIO.**—Range, 100; system, Marconi-United, 120. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Cleveland & Buffalo Transit Co., owner of vessel.
- SUN.**—Range, 250; system, Marconi, 240; hours, 8m-12m.
- SUWANNEE.**—System, Marconi-United, 120.
- ST. FRANCIS.**—System, Marconi; rates 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Libby, McNeill & Libby, owners of vessel.
- ST. HELENS.**—Rates, North and South American service 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- ST. NICHOLAS.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Columbia River Packers' Association, owner of vessel.
- TAHOMA.**—Strike out all particulars.
- TASCO.**—System, Fessenden, 250; service, PG; hours, X; rates, 3 c. (0.15 fr.) per word, 30 c. (1.50 fr.), minimum, per radiogram.
- TEXAS (KUR).**—Range, 200; system, Marconi, 240; hours, X; rates 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- THEODORE ROOSEVELT.**—Range, 150; system, Marconi, 120; hours, N; rates, 2 c. (0.10 fr.) per word, 20 c. (1 fr.), minimum, per radiogram.
- TIONESTA.**—System, Marconi, 120.
- TIVIVES.**—Range, 500; system, composite, 1000; hours, N; service PG; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- TOLEDO.**—Range, 200; system, Marconi, 120; W. L., 300, 600; service, PG; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Sun Co., owner of vessel.
- TOPILA.**—Hours, 7m-12m, 1s-5s, 7s-10s.
- TURRIALBA.**—Range, 500; system, Wireless Specialty Apparatus Co., 1000; service, PG; hours, N. Notes, Radio station operated and controlled by the Tropical Radio Telegraph Co. Turrialba Steamship Corporation, owner of vessel.
- TUSCAN.**—Range, 150; system, Marconi-United, 120; hours, 8m-8s.
- UMATILLA.**—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- VANADIS.**—Range, 300; system, Telefunken, 1000; W. L., 300, 450, 600; service, P; hours, X. Note, Radio station operated and controlled by C. K. G. Billings, owner of vessel (yacht).
- VENTURA.**—Range, 200; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- VESTA (KTS).**—System, Marconi; W. L., 300, 600; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of New York, owner of vessel.
- VESTAL.**—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- VICTORIA (WAD).**—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- VIGILANCIA.**—System, Marconi, 400.
- VIRGINIA (KSZ).**—Strike out all particulars.
- VIRGINIAN (WKV).**—Range, 350; system, Telefunken, 1000; hours, 9m-12m, 2s-5s, 8s-10.30s; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- WALLULA.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Port of Portland, owner of vessel.
- WASHINGTONIAN.**—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. American-Hawaiian Steamship Co., owner of vessel.
- WASHTENAW.**—Range, 200; system, Marconi, 120; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.

RADIO SERVICE BULLETIN.

- W. B. FLINT.—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Libby, McNeill & Libby, owners of vessel.
- WESTERN STATES.—Range, 125; system, Marconi, 240; hours, X.
- WHITTIER.—Range, 200; system, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- WILHELMINA.—Range, 250; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- WILLAMETTE.—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Willamette Steamship Co., owner of vessel.
- WILLIAM CHATHAM.—System, Marconi, 120; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- WM. F. HERRIN.—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- WILLIAM P. SNYDER JR.—Range, 125; system, Marconi, 120.
- WINDBER.—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Pacific-American Fisheries, owner of vessel.
- WINIFRED.—Range, 200; system, Marconi, 120; hours, 7m-9s; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram.
- W. S. PORTER.—Rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Associated Oil Co., owner of vessel.
- YAGUEZ.—Strike out range and system. Note, Ocean Freight Line (Inc.), owner of vessel.
- YALE.—System, Poulsen arc. Strike out rates. Notes, Radio station operated and controlled by the Federal Telegraph Co. Metropolitan Steamship Co. (Pacific Steam Navigation Co.), owner of vessel.
- YOSEMITE.—System, Marconi, 120; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- YUCATAN.—Range, 200; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram.
- ZACAPA.—Range, 500; system, composite, 1000; service, PG; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Tropical Radio Telegraph Co. Zacapa Steamship Corporation, owner of vessel.
- ZAPORA.—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.), minimum, per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. International Fisheries Co., owner of vessel.
- ZULIA.—System, Marconi, 240.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out particulars after the following call signals: KGS, KNJ, KRY, KRZ, KSV, KSW, KSX, KSY, KSZ, NRK, WAS, WBC, WHN, WTI.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made in the list of Radio Stations of the United States only.]

- GRAND FORKS, N. DAK.—Call, 9XN; W. L., 300-1400*.
- HYATTSVILLE, MD.—W. L., 300, 400, 600*.
- NEW BEDFORD, MASS.—W. L., 200, 300, 425, 600.
- OAKLAND, CAL.—Strike out all particulars.
- PHILADELPHIA, PA.—W. L., 300, 500, 600.
- ST. DAVIDS, PA.—W. L., 300, 425, 450, 600.

SPECIAL LAND STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out 6YE, and change 9YN to 9XN.

MISCELLANEOUS.

SOUTH WELLFLEET STATION.

The license issued to the Marconi Wireless Telegraph Co. of America for their high-powered station at South Wellfleet, Mass., has been amended, authorizing a coast-station rate of 42 cents per word on radiograms transmitted to vessels at sea, distant 400 miles or more. This rate, plus an 8-cent ship-station charge, makes a total wireless rate of 50 cents per word, to which the land line charges must be added.

CLASSIFICATION OF SHIP STATIONS.

There seems to be some misunderstanding concerning the classification of ship stations, as provided in the Laws and Regulations, edition of July 27, 1914, page 51.

If a vessel volunteers to enter a class higher than required by the regulations, and is so licensed, the vessel is required to maintain the service or watch prescribed. The license is a guaranty to the public for the class of service designated therein. Vessels violating classification requirements indicated by their licenses may be penalized under section 1 of the act of August 13, 1912, as any station operating in violation of the provisions of its license is held to be operating for a purpose other than that for which it was licensed.

If a vessel of the first class finds it impossible at any time to obtain two first-grade operators, it would constitute a violation for a second-grade operator to serve, but any mitigating circumstances may be presented to the Secretary of Commerce.

The London convention provides that ship-service messages or messages of the crew may be transmitted by a second-grade operator, but contemplates that all regular paid passenger traffic be handled by first-grade operators at not less than 20 words per minute.

GASOLINE ENGINES.

Attention is invited to the act of Congress, approved October 22, 1914, effective on and after date of approval, amending section 4472, Revised Statutes, and which reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section forty-four hundred and seventy-two of the Revised Statutes of the United States of America be, and the same is hereby, amended by adding thereto the following provision:

"Provided, however, That nothing in the foregoing or following section of this Act shall prohibit the transportation and use by vessels carrying passengers or freight for hire of gasoline or any of the products of petroleum for the operation of engines to supply an auxiliary lighting and wireless system independent of the vessel's main power plant: *Provided further,* That the transportation or use of such gasoline or any of the products of petroleum shall be under such regulations as shall be prescribed by the board of supervising inspectors, with the approval of the Secretary of Commerce."

In the near future regulations authorized by the last proviso of the amendment will be adopted by an executive committee of the Board of Supervising Inspectors of Steam Vessels. When these regulations are approved they will be published in this bulletin as an amendment to the Radio Laws and Regulations, edition of July 27, 1914, page 49, paragraph 8.

If an internal-combustion engine is provided as the only means of auxiliary power supply to operate the radio equipment, under the act of June 24, 1910, amended July 23, 1912, it will be necessary for radio inspectors to determine if the equipment is efficient under the ship act, and in accordance with the regulations governing radio communication, page 49, paragraphs 1 to 5, inclusive.

Until such regulations are approved, gasoline may not be carried except with the approval of the Secretary of Commerce in each case, and then subject to change to meet such requirements as may be later promulgated.

INTERFERENCE.

The twelfth and thirteenth regulations, section 4, of the radio act, approved August 13, 1912, provide for a division of time between Government and commercial radio stations when interference between such stations can not be eliminated by the enforcement of the wave length and sharp tuning regulations.

In some localities where two or more commercial land stations are operated in close proximity, the various owners have mutually agreed upon a division of time.

In particular, complaints have been entered against the Federal Telegraph Co. for interference on general public service and Government wave lengths, caused by their Poulsen arc stations at San Francisco and Honolulu.

F. A. Kolster, radio expert of the Bureau of Standards, was sent to San Francisco to determine the cause of the interference and remedy it if possible. The details of his investigations will be published in an early edition of the Proceedings of the Institute of Radio Engineers. The conclusions reached by Mr. Kolster indicate that the interference caused by the arc stations is due to certain reinforced harmonics, which, in extreme cases, can be eliminated or reduced by the employment of special circuits at either the sending or receiving stations, or both. It appears, however, in the particular cases reported and investigated, that the interference can be sufficiently reduced or eliminated at the receiving station by proper manipulation of modern efficient receiving apparatus.

Operators should bear in mind the following:

First. Interference of this character can be reduced and often entirely eliminated by proper adjustment of the coupling of the receiving transformer. In most cases a fairly "loose coupling" will be required.

Second. Variation of coupling destroys resonance and thereby reduces the strength of the desired incoming signals unless the circuits are readjusted to resonance for each variation of coupling.

COMMERCIAL EXTRA FIRST-GRADE OPERATORS.

As a reward for long and efficient service, the Secretary of Commerce has issued commercial extra first-grade licenses to the following operators:

E. N. Pickerill, New York, N. Y.
H. Sadenwater, New York, N. Y.
R. R. Carlisle, San Francisco, Cal.
D. I. Moir, Seattle, Wash.
H. B. Herty, New Orleans, La.
E. M. Cadwell, New York, N. Y.
S. E. Miller, San Francisco, Cal.

C. A. Scott, Boston, Mass.
J. A. Worrall, New York, N. Y.
E. K. Oxner, Boston, Mass.
J. W. Swanson, New York, N. Y.
A. E. Gerhard, San Francisco, Cal.
G. A. Geare, Washington, D. C.

RADIO SERVICE PERSONNEL.

R. E. Thompson, radio inspector at Seattle, resigned January 1, 1915, and R. H. Marriott, one of the radio inspectors at New York, has been transferred to Seattle.

W. O. Hensgen, one of the radio inspectors at New York, resigned January 1, 1915, and C. C. Kolster, assistant radio inspector, has been detailed to New York.

PANAMA-PACIFIC INTERNATIONAL EXPOSITION.

The Bureau of Standards and the Bureau of Navigation will have a joint radio exhibit at the Panama-Pacific International Exposition. The exhibit will be located in the Liberal Arts Building.

The one-quarter kilowatt, quenched spark gap, battery operated panel set, designed by the Bureau of Standards, which did such good work on the Department's motor boat *Tarragon* last summer on the Atlantic coast, will be exhibited and demonstrated. A complete set of inspection instruments used by the radio inspectors in the enforcement of the wireless laws will be included in the exhibit and the method of inspection will be explained and demonstrated frequently. Several other features of interest to those concerned with radiotelegraphy will be exhibited and demonstrated by the Bureau of Standards.

Benjamin E. Wolf, radio inspector of the Bureau of Navigation, has been appointed special agent in charge of the Bureau of Navigation exhibit. A radio inspector will be in constant attendance and will be prepared to give information concerning the radio laws and regulations to owners and masters of vessels, operators, and amateurs. Examinations of operators for Government licenses will be conducted at the exhibit by appointment.

OPERATOR EXAMINATIONS.

The Army Service School at Fort Leavenworth, Kans., has been added to the list of places where operators may take examination for licenses.

RADIO RATES INCREASED.

The Marconi Wireless Telegraph Co. of America has been authorized to increase the Pacific coast radio rates of their ship and shore stations for the North and South American service, as follows: Ship rate from 2 cents to 4 cents per word; coastal rate from 3 cents to 6 cents per word.

This makes uniform rates for this Marconi service on both the Atlantic and Pacific coasts, and conforms to the rates of the United States Naval Radio Service.

AMATEUR FINED.

A. W. Eaton, of Los Angeles, Cal., who operated his amateur station without a license, was reported by the radio inspector of that district, and was found guilty and fined on November 24, 1914, by Judge Wellborn, of the United States district court.

This case is interesting because the defendant contended that his station did not require a license, inasmuch as he could not interfere with commercial stations in the vicinity or transmit beyond the limits of the State in which his station was located. His conviction was obtained on the ground that he could interfere with the interception of signals from outside that State by licensed amateurs, and establishes a precedent in this regard.

AMENDMENTS.

[To be cut out and pasted in your copy.]

The Radio Communication Laws of the United States, edition of July 27, 1914, are hereby amended as follows:

Paragraph 153, page 66, add the following sentence:

Renewals or new licenses may be issued a reasonable length of time previous to the expiration of existing licenses, but must bear the exact date of issue, which must correspond with the date on the back of Form 756 forwarded to the Commissioner of Navigation.

Paragraph 162, page 67, should read:

Operators desiring to retain their expired or canceled licenses may make application therefor to the examining officer or to the Commissioner of Navigation. Old licenses returned to operators will be marked "Canceled" or "Expired" in red across their faces, and the service record will be transcribed on the back of Form 756 sent to the Commissioner of Navigation, in accordance with paragraph 154, above.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, February, 1915—No. 2

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instructions, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the list of Radio Stations of the United States, and will contain information concerning Government, commercial, and special stations only. Information regarding amateur stations will appear only in the annual edition of the list of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the list of Radio Stations of the United States and the list of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) will be printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws will be printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:

E. F. SWEET,
Acting Secretary.

ABBREVIATIONS.

INTERNATIONAL ABBREVIATIONS USED IN THIS LIST.

Nature of service:

PG=General public.

PR=Limited public or limited commercial.

P=Private.

O=Government business exclusively.

Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m.

s=p. m.

12 m=Midday.

12 s=Midnight.

fr.=Franc (francs).

c.=Cents.

OTHER ABBREVIATIONS.

Name =Name of station.

G. loc. =Geographical location (O=west longitude, N=north latitude).

Call =Radio call letters.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths.

Service=Nature of service.

Hours =Hours of operation.

Rates =Ship or coast charges in francs and dollars.

Notes =Refers to notes in the Berne list.

Co. =Company.

Corp. =Corporation.

NEW STATIONS.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the list of radio stations of the United States, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Name.	Call signal.	System.	Wave lengths.	Ship rate.	
				Per word.	Minimum per radiogram.
Bradford ¹	KNQ	.....	300,600	.....	.....
California (WOR) ²	WOR	.....	300,600	.....	.....
Camaguey ³	KWI	.....	300,600	.....	.....
Coalinga ⁴	WOT	.....	300,600	.....	.....
Colon (WHO) ⁵	WHO	Marconi...	300,600	4 c. (0.20 fr.)...	40 c. (2 fr.)...
Dayton ¹	KNP	.....	300,600	.....	.....
Moreni ¹	KNX	.....	300,600	.....	.....
Northern Pacific ⁶	WIM	Marconi...	300,600	4 c. (0.20 fr.)...	40 c. (2 fr.)...
Pioneer ¹	KIG	.....	300,600	.....	.....
Polarine.....	KOI	.....	300,600	.....	.....
Santiago ³	KWE	.....	300,600	.....	.....
Satsuma ⁷	KJI	.....	300,600	.....	.....
Vico ⁸	KNN	Marconi...	300,600	4 c. (0.20 fr.)...	40 c. (2 fr.)...
William O'Brien ⁸	KPN	Marconi...	300,600	4 c. (0.20 fr.)...	40 c. (2 fr.)...
Wm. E. Chapman ⁹	KRM	.....	300,600	.....	.....

^{*} Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.¹ Standard Oil Co. of New Jersey, owner of vessel.² John A. Hooper, owner of vessel.³ New York & Cuba Mail Steamship Co. (Ward Line), owner of vessel.⁴ Union Steamship Co., owner of vessel.⁵ American-Mexican Steamship & Trading Co., owner of vessel.⁶ Great Northern Pacific Steamship Co., owner of vessel.⁷ Barber & Co., owner of vessel.⁸ East Coast Transportation Co., owner of vessel.⁹ Merritt & Chapman Derrick & Wrecking Co., owner of vessel.

SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Call signal.	Station.	Call signal.	Station.
KIG	Pioneer.	KRM	Wm. E. Chapman.
KJI	Satsuma.	KWE	Santiago.
KNG	Bradford.	KWI	Camaguey.
KNN	Wico.	WHO	Colon.
KNP	Dayton.	WIM	Northern Pacific.
KNX	Moreni.	WOR	California.
KOI	Polarine.	WOT	Coalinga.
KPN	William O'Brien.		

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the list of radio stations of the United States only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Hartford, Conn.....	1ZC	200, 300, 425, 600...	P	X	Harry E. Chapman.
Kansas City, Mo.....	9XK	Variable.....	P	X	Robert R. Moore.
Lexington, Mass.....	1ZD	200, 425, 600.....	P	X	Samuel W. Dean.
Penikese, Mass.....	1ZP	200, 300, 425, 600.....	P	X	James A. B. Thomas.
Springfield, Ill.....	9ZS	600, 2000.....	P	X	Illinois Watch Co.
St. Louis, Mo.....	9XV	850, 1200, 1500, 2000.	P	X	Washington University.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1ZC	First district:	9XK	Ninth district:
1ZD	Hartford, Conn.	9XV	Kansas City, Mo.
1ZP	Lexington, Mass.	9ZS	St. Louis, Mo.
	Penikese, Mass.		Springfield, Ill.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made in the list of radio stations of the United States, and in the International List of Radiotelegraph Stations published by the Berne bureau.]

HILLCREST (DALY CITY), CAL.—Range, 200; system, Marconi, 340.
HOBOKEN, N. J.—Range, 400; system, Marconi, 1000; W. L., 2250; service, PR; hours, X. Notes: Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Station limited to correspondence with land stations at Scranton, Pa., Binghamton, N. Y., and Buffalo, N. Y., and with trains of the Delaware, Lackawanna & Western Railroad, and is for the purpose of transacting that company's railroad business.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made in the list of radio stations of the United States, and in the International List of Radiotelegraph Stations published by the Berne bureau.]

ADMIRAL DEWEY.—System, Marconi, 400.
ADMIRAL SCHLEY.—System, Marconi, 400.
ALAMEDA.—Strike out range; system, Kilbourne & Clark; strike out rates. Note, Alaska Steamship Co., owner of vessel.
ANTILLES.—System, Marconi, 400.

- CALAMARES.**—Range, 500; system, composite, 1,000; service, PG; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Tropical Radio Telegraph Co. Calamares Steamship Corp., owner of vessel.
- CHARLTON HALL.**—System, Marconi; rates 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. United States Steel Products Co., owner of vessel.
- COMUS (KKD).**—System, Marconi, 400.
- CONCHO.**—System, Marconi, 400.
- CORDOVA.**—Strike out all particulars.
- CORWIN.**—Strike out all particulars.
- DOLPHIN (WAU).**—Strike out all particulars.
- EDITH.**—Strike out all particulars.
- EL DIA.**—System, Marconi, 240.
- EL SIGLO.**—System, Marconi, 240; hours, X.
- E. R. STERLING.**—Range, 100; system, composite, 200; W. L., 300, 450, 600; service, P; hours, X. Notes, Radio station operated and controlled by Sterling Ship Co., owner of vessel.
- FALCON (WRK).**—Strike out all particulars.
- FIFIELD.**—Strike out all particulars.
- FINLAND.**—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- GENERAL HUBBARD.**—Strike out all particulars.
- GEORGE W. FENWICK.**—Strike out all particulars.
- JEFFERSON (KOD).**—System, Marconi, 400.
- JEFFERSON (WAJ).**—Strike out range; system, Kilbourne & Clark; strike out service; strike out hours; strike out rates. Note, Alaska Steamship Co., owner of vessel.
- LAMPASAS.**—System, Marconi, 400.
- LATOUCHE.**—Strike out all particulars.
- MADISON.**—System, Marconi, 400.
- MARIPOSA.**—Strike out range; strike out system; strike out rates. Note, Alaska Steamship Co., owner of vessel.
- MORRO CASTLE.**—System, Marconi, 400.
- NEW YORK (KSN).**—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. International Mercantile Marine Co. (American Line), owner of vessel.
- NOME CITY.**—Strike out all particulars.
- NORTHWESTERN (WAN).**—Strike out all particulars.
- NUECES.**—System, Marconi, 400.
- PHILADELPHIA (KSM).**—System, Marconi, 480.
- PIONEER (WPN).**—Strike out all particulars.
- PRINCESS ANNE.**—System, Marconi, 400.
- ROBERT DOLLAR.**—Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram.
- SACRAMENTO (WIA).**—Strike out all particulars.
- SANTA ANA.**—Strike out all particulars.
- SEWARD.**—Strike out all particulars.
- SIERRA.**—System, Poulsen arc. Notes, Radio station operated and controlled by the Federal Telegraph Co. Oceanic Steamship Co., owner of vessel.
- ST. PAUL (KSO).**—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. International Mercantile Marine Co. (American Line), owner of vessel.
- TATOOSH.**—Strike out all particulars.
- TYEE.**—Strike out all particulars.
- VICTORIA.**—Strike out all particulars.
- WAKIVA (WLA).**—Strike out all particulars.
- WASHINGTONIAN.**—Strike out all particulars.
- YAGUEZ.**—Strike out all particulars.

SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out particulars after the following call signals: KDY, WAD, WAE, WAI, WAL, WAN, WAR, WAU, WAV, WIA, WKW, WLA, WMT, WNG, WNN, WPC, WPE, WPN, WRF, WRK, WRN.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made in the list of radio stations of the United States only.]

BELOIT, WIS.—W. L., 300, 600, 900 variable.

LOS ANGELES, CAL.—W. L., 300, 485, 600 variable.

SLINGERLANDS, N. Y.—W. L., 200, 300, 600, 1000, 1200, 2000, 5500. Radio station controlled by C. F. & B. V. Deitz.

MISCELLANEOUS.

RADIO STATIONS OF THE UNITED STATES.

[Oct. 1, 1914.]

Commercial and special land stations.

Controlled by—	General public.	Limited public.	Limited commercial.	Government official.	Special. ¹	Total.
United States Navy.....	23			25		48
United States Coast Guard Service.....				1		1
United States Army.....	7			32		39
Superintendent United States Capitol Building and Grounds.....				1		1
Insular government, Philippine Islands.....	6					6
Marconi Co.....	58	3	1			62
National Electric Signaling Co.....	1	1	1			3
Tropical Radio Telegraph Co.....	2					2
Federal Telegraph Co.....		6	2			8
Mutual Telephone Co., Hawaii.....	3	2				5
Atlantic Communication Co.....	2					2
Delaware, Lackawanna & Western R. R. Co.....			4			4
Unclassified.....	3		5		54	62
Total.....	105	12	13	59	54	243

Ship stations.

Controlled by—	Number.	Controlled by—	Number.
United States Navy.....	248	Tropical Radio Telegraph Co.....	21
United States Coast Guard Service.....	25	Atlantic Communication Co.....	15
United States Army.....	34	Unclassified.....	197
United States Department of Commerce.....	6		
Marconi Co.....	330	Total.....	895
National Electric Signaling Co.....	19		

Amateur stations licensed.²

District and headquarters.	Number.	District and headquarters.	Number.
1. Boston, Mass.....	374	7. Seattle, Wash.....	114
2. New York, N. Y.....	503	8. Cleveland, Ohio.....	456
3. Baltimore, Md.....	543	9. Chicago, Ill.....	172
4. Savannah, Ga.....	36		
5. New Orleans, La.....	36	Total.....	2,796
6. San Francisco, Cal.....	562		

¹ Including experimental and special amateur.

² To July 1, 1914.

Summary of radio stations of the United States.

Kind of station.	Number.	Kind of station.	Number.
Government land stations.....	95	Government land and ship stations.....	408
Private, commercial, and special land stations.....	148	Private, commercial, special, and private land and ship stations.....	730
Total.....	243	Total.....	1,138
Government ship stations.....	313	Amateur stations licensed.....	2,796
Private, commercial, and private ship stations.....	582	Grand total.....	3,934
Total.....	895		

COMMERCIAL OPERATOR'S LICENSE SUSPENDED.

Under authority of the Radio Communication Laws and Regulations of the United States, page 49, paragraph 5, one of the United States coast guard cutters was recently conducting a range test with a merchant vessel at sea and considerable difficulty was experienced in establishing communication. The operator on the merchant vessel became exasperated and asked the operator on the coast guard cutter why he did not learn to receive, thereby violating the Regulations.

In accordance with section 3 of the act of August 13, 1912, his commercial first-grade license has been suspended by the Secretary of Commerce for a period of one month.

GASOLINE ENGINES.

Gasoline engines may not be installed and operated as a source of auxiliary electric power on passenger vessels previous to the promulgation of the Steamboat-Inspection Service Regulations. The board is now in session.

Those contemplating such installations should bear in mind that the engine should be located with the same view to safety and effective operation as approved storage-battery equipments.

Attention is invited to the act of July 23, 1910, amended June 24, 1912, which requires "auxiliary power supply," and to the service regulations of the London Convention, Article XI, which provides that such emergency power supply shall be located with a view to greatest possible protection against accident, to be determined by the Government issuing the wireless license. Attention is also invited to the laws and regulations, page 49, paragraph 2, which states that the transmitting apparatus operated from the emergency power supply should be capable of functioning within two minutes after unexpected notice to the operator.

COMMERCIAL EXTRA FIRST-GRADE OPERATORS.

The names of the following operators have been added to the list of those to whom commercial extra first-grade licenses have been issued by the Secretary of Commerce, as a reward for long and efficient service: H. W. Sinclair and E. W. Lovejoy, San Francisco, Cal., and J. H. Benson, Philadelphia, Pa.

COMMERCIAL OPERATOR PENALIZED.

About a year ago an operator holding a second-grade commercial operator's license changed the face of his license to read "Commercial first grade," and secured employment thereunder as a commercial first-grade operator.

The case came to the attention of the Department when the operator applied for a renewal of his license, and the Secretary of Commerce suspended his license for a period of one year, and, furthermore, all the papers in the case have been referred to the United States district attorney for prosecution for forgery.

OPERATOR EXAMINATIONS.

The act of August 13, 1912, providing for the licensing of commercial radio operators went into effect December 13, 1912. These licenses are issued for a period of two years, and during the past few months a great deal of attention has been given to their renewal. The attention of all radio operators is invited to the Radio Communication Laws of the United States, edition of July 27, 1914, page 66, paragraphs 152 to 162, inclusive.

Under certain conditions prescribed in the regulations, renewal licenses may be issued without examination, but all operators are warned that they should keep well informed as to the manipulation and operation of modern radio apparatus, and that it is necessary for them to keep posted in regard to any new radio laws or regulations.

Recently an operator holding a commercial first-grade operator license applied to one of the radio inspectors for a renewal of his license without examination, but the service record on the back of his license did not show the required service, so that the applicant was informed that he must take another examination. He took the examination and attained an average of only 36.5 per cent, which did not entitle him to hold even a commercial second-grade license.

Shortly after he had taken the examination he submitted a letter, sworn to by his employer, stating that he had been employed and served as a radio operator on ships during the 90 days specified in the regulations. This affidavit might have been accepted as evidence of satisfactory service in lieu of the service record except that the examination which the operator took demonstrated that the affidavit was not satisfactory evidence and indicated clearly that the applicant was not entitled to hold a first or second grade license under the requirements.

The present regulations and examinations concerning the renewal of operator licenses and reexamination were drawn up with a particular view to eliminate from the ranks those operators who fail to keep abreast of the times.

Any regulation similar to that concerning the reexamination of operators, where a division line is sharply drawn, is bound to appear to be a hardship in some cases.

Referring further to the whole question of the examination of operators, attention is invited to an article in volume 2, number 3, of the "Proceedings of the Institute of Radio Engineers," by V. Ford

Greaves, radio engineer of the Bureau of Navigation. Particular reference is made to the chapter under the heading "Technical knowledge," pages 201 to 204, inclusive.

The operator examination question sheets under the heading "Instructions" provide: "The questions are short, but applicants are expected to state clearly their full knowledge of each subject." No doubt those operators who have performed satisfactory service under a commercial first-grade license, but who fail in the examination for renewal of same, will study and procure their licenses at their next examination. When the operators now holding commercial first-grade licenses become familiar with the requirements concerning reexamination they will undoubtedly take the necessary steps to properly prepare themselves for the reexamination, which is the Bureau's intention.

STORAGE BATTERIES.

The following data concerning the care, operation, and testing of storage batteries are published for the information and guidance of radio inspectors, and it is believed that the information will be valuable to operators and others concerned with the maintenance of storage-battery equipments. Similar data concerning the inspection of the Edison storage battery may be published in a future edition.

With a view to obtaining uniform and consistent inspections and tests of the storage batteries furnished as the auxiliary source of power supply for the radio equipments on board ships, required by the act of July 23, 1912, amending the act of June 24, 1910, the following instructions covering suitable tests are issued:

It is probable that storage batteries of sufficient size and number to be used as the reserve power for the main motor generator set will soon come into more general use.

Tests involving discharging the battery are both uncertain in cases of partial charge and require too much time and aggravate the condition it is desired to correct. Therefore the tests indicated hereafter are made by putting the battery on charge. In addition, the general condition of storage batteries should be noted as to—first, cleanliness (battery trays should be kept clean and dry and free from electrolyte, which tends to short circuits and grounds); second, connections (all connections should be tight and free from verdigris); third, installation (cells or trays should be securely fastened in position to prevent accident in heavy weather or when vessel has listed considerably, conditions probable in emergency); fourth, maintenance (all caps, stoppers, or valves should be in proper position).

Data regarding the storage batteries should be posted in the radio room. This information should indicate the make, type, size, and the charging rates of the cells; also, if possible, information regarding the electrolyte, including information regarding the specific gravity before and after the charges, and records of charge and if any changes have been made in electrolyte.

The tests indicated hereafter may take a maximum of one-half hour time, so that tests should be started immediately on boarding vessel. Arrangements must be made to see that ship voltage is maintained at the proper or normal value. The charging amperage should be known, but the resistance of most panels are fixed so that standard

types will soon be familiar to inspectors. It must be remembered that the batteries provided on vessels may exceed the necessary capacity required to make the set comply with the law, and this fact must be considered before a battery can be rejected. The tests prescribed hereafter are approved by the manufacturers of the different types of batteries involved and a persistent use of the information gained by these tests, if brought to the attention of the proper authorities, will undoubtedly result in an improved maintenance of this equipment. Instructions covering the tests of the batteries made by the Electric Storage Battery Co. are furnished herewith.

The following instructions apply to the inspection of chloride, oxide, and ironclad oxide types of lead batteries made by the Electric Storage Battery Co., Philadelphia, Pa.:

Types of batteries.—Batteries in wireless service on shipboard, as supplied by the Electric Storage Battery Co., are of several types, viz, oxide, chloride, or ironclad oxide, and are assembled in rubber jars in wood trays.

Each tray bears a name plate. In the case of oxide and ironclad oxide the name plate gives the type, number of cells, charging rates, discharge rating, and the normal full-charge specific gravity of the electrolyte. In batteries of the chloride type, the name plate gives the catalogue number of the tray and the normal charging rate.

Voltage.—Put battery on charge at current rate, which is used for giving the battery its overcharge or equalizing charge as defined hereafter.

The charging panels for these types of battery are supposed to be designed so that the proper charging rates are obtained for the following tests when the ship voltage is kept up to normal. Radio inspectors must therefore see that the ship voltage is kept at proper value during the test.

All oxide types of batteries on test should be charged at within 10 per cent of the finishing rate. This rate for the different types is rated on the name-plate data and is shown in the accompanying tables. All chloride batteries on test should be charged at within 10 per cent of the normal charging rate as shown on the name plate and in the accompanying tables. For chloride cells, the "finishing" and "normal" charge rates are the same. For oxide cells the "finishing" rates are specially indicated.

If the closed current voltage of the battery, under proper charge rate, stops rising within 30 minutes—i. e., reaches a maximum, which is above 2.45 volts per cell (it may go as high as 2.65 volts per cell or over) and cells are gassing freely—battery can be considered as charged. If at the end of 30 minutes proper charge the battery voltage is still rising, but is an average of 2.45 volts per cell, and cells are gassing quite freely, battery can be assumed to be within 15 per cent of being charged—i. e., they can be considered as capable of furnishing within 15 per cent of rated normal full-charge capacity.

If at the end of 30 minutes battery voltage is below an average of 2.45 volts per cell, or cells are gassing but slightly or not at all, battery can not be considered as charged within 15 per cent of full capacity and should be put on charge and charge completed without delay.

Just before the end of charge, read the voltage of one or two cells of each tray of battery with the low-reading voltmeter provided and if these cell-voltage readings agree closely with the average cell

voltage of the battery (found by dividing the battery voltage by the number of cells in battery), it can safely be assumed that all cells are uniform in voltage and no more cell-voltage readings need be taken. If the cell voltages are above the average cell voltage of battery, as defined above, an inspection should be made to discover the defective cells, the presence of which is indicated.

Cell voltages at the end of each of the test charges outlined above will be found to vary somewhat between different batteries, due to type variation, temperature, or age and conditions of plates, and for this reason a fixed voltage value can not be used in these tests.

However, the minimum voltage required in the above tests—namely, 2.45 volts per cell—is considered to allow for all possible conditions which may be encountered and to be equitable to the ship station to a degree which the inspector may safely require. These voltage requirements also apply to the lead batteries made by the European companies affiliated with the Electric Storage Battery Co.

Electrolyte.—The specific gravity of the electrolyte in lead cells is an excellent indication of the condition of the battery if the values and treatments previous to the test are known. If the readings at the end of the last full charge are known and no changes have been made in electrolyte, the readings at the time of tests are reliable indications as to the state of discharge.

So far it has been impracticable to obtain reliable specific gravity data for ship storage batteries, and only those readings taken by radio inspectors can be relied upon and the voltage tests outlined must be the main basis for determining the condition.

Specific gravity.—If time permits, take a few specific-gravity readings of the electrolyte of several cells in different trays as a check on the general condition of the battery.

Marked variation in the specific gravity in the different cells of the battery may be an indication of trouble in the cells in which the gravity is low, and such cells should be carefully checked up, taking voltage readings when charging and noting whether these cells gas equally with other cells.

The specific gravity falls during discharge and rises during charge, and can be used as an indication of the state of charge of the battery provided the gravity at the end of the last full charge is known.

In batteries of the exide and ironclad exide type the normal gravity at full charge is 1.280 at 70° F., but a variation down to 1.250 is allowed. For batteries of the chloride type the normal full-charge gravity is 1.210 at 70° F. with an allowable variation down to 1.190.

As the temperature affects the gravity this must be considered and corrections made as follows: To correct the gravity to normal temperature (70° F.), subtract one point for each 3° F. below 70°, and add one point for each 3° above 70° F. For example, electrolyte which is 1.283 at 61°, or 1.277 at 79°, will be 1.280 at 70°; if 1.213 at 61° or 1.207 at 79°, it will be 1.210 at 70°.

Gassing.—All cells should gas uniformly.

Height of electrolyte.—Remove vent plugs from several cells throughout the battery to make sure the electrolyte covers the plates.

Connections.—See that terminals and connections are tight and free from corrosion.

Additional.—Additional information regarding the batteries manufactured by the Electric Storage Battery Co. can be obtained from the pamphlets and publications issued by this company.

The installation of a recording ampere-hour meter is strongly recommended for all storage battery equipments on shipboard.

TABLE OF CHLORIDE PORTABLE BATTERIES.

[Normal ampere hour capacity can be determined by multiplying the normal discharge rate by 8.]

Cat. No.	Cells in case.	Type and number of plates.	Rate of normal charge and discharge.	Outside dimensions of case.			Height over lugs.	Weight complete.
				Length.	Width.	Height.		
			<i>Amps.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Inches.</i>	<i>Pounds.</i>
801.....	1	"C" 3	1½	3½	5½	8½	10½	8
802.....	2	"C" 3	1½	5½	5½	8½	10½	14
803.....	3	"C" 3	1½	7	5½	8½	18½	20
804.....	4	"C" 3	1½	8½	5½	8½	10½	26
805.....	5	"C" 3	1½	10½	5½	8½	10½	32
401.....	1	"D" 3	2½	3½	7½	10½	11½	15
402.....	2	"D" 3	2½	5½	7½	10½	11½	26
403.....	3	"D" 3	2½	7	7½	10½	11½	37
404.....	4	"D" 3	2½	8½	7½	10½	11½	48
405.....	5	"D" 3	2½	10½	7½	10½	11½	59
406.....	1	"D" 5	5	4½	7½	10½	11½	24
407.....	2	"D" 5	5	5	7½	10½	11½	43
408.....	3	"D" 5	5	9½	7½	10½	11½	62
409.....	4	"D" 5	5	13	7½	10½	11½	81
410.....	5	"D" 5	5	15½	7½	10½	11½	100
411.....	1	"D" 7	7½	5½	7½	10½	11½	33
412.....	2	"D" 7	7½	9½	7½	10½	11½	58
413.....	3	"D" 7	7½	13	7½	10½	11½	83
414.....	4	"D" 7	7½	16½	7½	10½	11½	108
415.....	5	"D" 7	7½	20½	7½	10½	11½	133
501.....	1	"E" 5	10	4½	9½	12½	13½	33½
502.....	2	"E" 5	10	7½	9½	12½	13½	60
503.....	3	"E" 5	10	10	9½	12½	13½	86½
504.....	4	"E" 5	10	13½	9½	12½	13½	113½
505.....	5	"E" 5	10	15½	9½	12½	13½	140
506.....	1	"E" 7	15	5½	9½	12½	13½	42½
507.....	2	"E" 7	15	9½	9½	12½	13½	82½
508.....	3	"E" 7	15	13½	9½	12½	13½	122½
509.....	4	"E" 7	15	17½	9½	12½	13½	163

EXIDE BATTERY DATA, SHOWING FINISHING CHARGE RATE.

Plates in jar.	M. V. ironclad oxide.					M. V. oxide.				
	Charge rate.		4½ hours dis- charge.	A. H. ca- pacity.	Width of 1½-rib jars. ¹	Charge rate.		4 hours dis- charge.	A. H. ca- pacity.	Width of 1½-rib jars. ¹
	Start.	Finish.				Start.	Finish.			
	<i>Amps.</i>	<i>Amps.</i>	<i>Amps.</i>		<i>Inches.</i>	<i>Amps.</i>	<i>Amps.</i>	<i>Amps.</i>		<i>Inches.</i>
7.....	19	8	21	94½	2¾	19	8	21	84	2¾
9.....	24	10	28	126	3½	24	10	28	112	3½
11.....	30	12	35	157½	4½	30	12	35	140	4½
13.....	35	14	42	189	5	40	16	49	168	5
15.....	40	16	49	220½	5¾	45	18	56	196	5¾
17.....	45	18	56	252	6½	51	20	63	224	6½
19.....	51	20	63	283½	7½	56	22	70	252	7½
21.....	56	22	70	315	8	8

¹ These jars have a uniform length of 6½ inches and height of 12½ inches.

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THE
UNIVERSITY OF ILLINOIS
23 APR 1915

RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, March, 1915—No. 3

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instructions, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the list of Radio Stations of the United States, and will contain information concerning Government, commercial, and special stations only. Information regarding amateur stations will appear only in the annual edition of the list of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the list of Radio Stations of the United States and the list of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) will be printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws will be printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

ABBREVIATIONS.

INTERNATIONAL ABBREVIATIONS USED IN THIS LIST.

Nature of service:

PG=General public

PR=Limited public or limited commercial.

P=Private.

O=Government business exclusively.

Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m.

s=p. m.

12 m=Midday.

12 s=Midnight.

fr.=Franc (francs).

c.=Cents.

OTHER ABBREVIATIONS.

Name =Name of station.

G. loc. =Geographical location (O=west longitude, N=north latitude).

Call =Radio call letters.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths.

Service=Nature of service.

Hours =Hours of operation.

Rates =Ship or coast charges in francs and dollars.

Notes =Refers to notes in the Berne list.

Co. =Company.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Longitude and latitude (approximate).	Call signal.
Akron, Ohio ¹	O 81 33 00	WOI
	N 41 06 00	
Detroit, Mich ¹	O 83 04 00	WOK
	N 42 19 00	

¹ Radio station operated and controlled by the Goodyear Tire & Rubber Co.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Name.	Call signal.	System.	Wave lengths.	Ship rate.	
				Per word.	Minimum per radiogram.
Antilla ¹	KWD	.....	300,600	.....	.....
Ardmore ²	KIA	.....	300,600	.....	.....
Balboa ³	WHU	Marconi.....	300,600	4 c. (0.20 fr.)	40 c. (2 fr.)
Corning ³	KIH	.....	300,600	.....	.....

* Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.

¹ New York & Cuba Mail Steamship Co. (Ward Line), owner of vessel.

² Standard Oil Co. of New Jersey, owner of vessel.

³ American-Mexican Steamship & Trading Co., owner of vessel.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS—continued.

Name.	Call signal.	System.	Wave lengths.	Ship rate.	
				Per word.	Minimum per radiogram.
Dacia * ¹	KGD	Marconi, 500.....	300, 600	4 c. (0.20 fr.)	² 40 c. (2 fr.)
Despatch * ⁴	WOA	Marconi.....	300, 600	8 c. (0.40 fr.)	³ 80 c. (4 fr.)
Georgiana * ⁵	KJE	do.....	300, 600	4 c. (0.20 fr.)	40 c. (2 fr.)
Guantanamo * ⁶	KWN	.....	300, 600	.....	.....
Latouche * ⁷	WAI	Kilbourne & Clark...	300, 600	.....	.....
Owera * ⁸	KZG	Marconi.....	300, 600	4 c. (0.20 fr.)	40 c. (2 fr.)
Petrolite * ⁹	KIF	.....	300, 600	.....	.....
Santa Ana * ⁷	WAL	Kilbourne & Clark...	300, 600	4 c. (0.20 fr.)	40 c. (2 fr.)
Westwego * ¹⁰	KGE	Telefunken, 1,000.....	300, 600	4 c. (0.20 fr.)	² 40 c. (2 fr.)
				12 c. (0.60 fr.)	³ \$1.20 (6 fr.)

* Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.

¹ Edward N. Breitung, owner of vessel. The station has a range of 150 miles, general public service, with no regular hours.

² North and South American service.

³ Transoceanic service.

⁴ Border Line Transportation Co., owner of vessel.

⁵ Walker, Armstrong Co., owner of vessel.

⁶ New York & Cuba Mail Steamship Co. (Ward Line), owner of vessel.

⁷ Alaska Steamship Co., owner of vessel.

⁸ Peter C. Gerry, owner of vessel (yacht).

⁹ Standard Oil Co. of New Jersey, owner of vessel.

¹⁰ Radio station operated and controlled by the Union Petroleum Steamship Co., owner of vessel. The station has a range of 200 miles, general public service, with no regular hours.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Station.	Call signal.	Station.
KGD	Dacia.....b	KZG	Owera.....b
KGE	Westwego.....b	WAI	Latouche.....b
KIA	Ardmore.....b	WAL	Santa Ana.....b
KIF	Petrolite.....b	WHU	Balboa.....b
KIH	Corning.....b	WOA	Despatch.....b
KJE	Georgiana.....b	WOI	Akron, Ohio.....c
KWD	Antilla.....b	WOK	Detroit, Mich.....c
KWN	Guantanamo.....b		

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the list of Radio Stations of the United States, edition of July 1, 1914, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Agricultural College, N. Dak.	9YG	300, 480, ² 600, variable.	P	X	North Dakota Agricultural College.
Canal Dover, Ohio.....	8ZX	450, 600.....	P	X	Harry S. Weber.
Cincinnati, Ohio.....	8ZF	200, 300, 450, 600...	P	X	Henry M. Rubel, jr.
Columbus, Ohio.....	8YO	400.....	P	X	Ohio State University.
Farmington, Conn.....	1ZZ	200, 300, 425, 600...	P	8s-12s	David Lyon Moore.
Hamilton, Ohio.....	8ZU	300, 600, 8000.....	P	X	Doron Bros. Electric Co.
Hartford, Conn.....	1ZM	200, 300, 425, 600...	P	7s-11s	Hiram Percy Maxim.
Illioopolis, Ill.....	9ZK	200, 300, 450, 600...	P	X	Harry J. E. Knotts, "State-Center Record."
New York, N. Y.....	2XU	300, 600, 2000, 40,000, variable.	P	X	Peter Cooper Hewitt.
Northampton, Mass.....	1ZL	200, 300, 425, 600...	P	X	Dean A. Lewis.
Springfield, Ohio.....	8ZM	300, 450, 600.....	P	X	Ross McGregor.
St. Louis, Mo.....	9YR	150, 600.....	P	X	St. Louis University.
Wheeling, W. Va.....	8ZW	300, 450, 600, 1800..	P	X	John C. Stroebel, jr.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1ZL	First district:	8ZM	Eighth district—continued.
1ZM	Northampton, Mass.	8ZU	Springfield, Ohio.
1ZZ	Hartford, Conn.	8ZW	Hamilton, Ohio.
	Farmington, Conn.	8ZX	Wheeling, W. Va.
2XU	Second district:		Canal Dover, Ohio.
	New York, N. Y.		Ninth district:
8YO	Eighth district:	9YG	Agricultural College, N. Dak.
8ZF	Columbus, Ohio.	9YR	St. Louis, Mo.
	Cincinnati, Ohio.	9ZK	Illinois, Ill.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

Alterations and corrections to be made in the list of Radio Stations of the United States, edition of July 1, 1914, and in the International List of Radiotelegraph Stations, published by the Berne bureau.]

Hollister, Cal.—G. loc. (approximate), O 121° 24' 00", N 36° 55' 43"; system, composite, 120 or 240; W. L., 300, 600, 1650.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

Alterations and corrections to be made in the list of Radio Stations of the United States, edition of July 1, 1914, and in the International List of Radiotelegraph Stations, published by the Berne bureau.]

A. G. LINDSAY.—Name, Pavlov.

ALMIRANTE.—Range, 500; system, composite, 1000; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Tropical Radio Telegraph Co. Almirante Steamship Corporation, owner of vessel.

ARGYLL (WTB).—Strike out system; strike out rates. Note, Union Steamship Co. (Union Oil Co.), owner of vessel.

CARRILLO.—Name, Carrillo; range, 500; system, composite, 1000; service, FG; hours, N; rates 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Tropical Radio Telegraph Co., Carrillo Steamship Corporation, owner of vessel.

CITY OF EVERETT.—Range, 250; system, Telefunken, 1000; W. L., 300, 600; service, PG; hours, 9m–12m, 2s–5s, 8s–10.30s; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Atlantic Communication Co. Standard Oil Co. of New York, owner of vessel.

COALINGA.—Note, Union Steamship Co. (Union Oil Co.), owner of vessel.

CRASTER HALL.—System, Marconi; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram.

DORA.—Strike out system; W. L., 300, 600; strike out rates. Note, Alaska Steamship Co., owner of vessel.

EL ALBA.—System, Marconi, 240; hours, X.

EL CID.—Hours, X.

EL NORTE.—Range, 200; system, Marconi, 400; W. L., 300, 600; service, PG; hours, X; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Southern Pacific Co., owner of vessel.

EL SUB.—System, Marconi, 240; hours, X.

GOLIAH.—System, Kilbourne & Clark.

HERMAN FRASCH.—Range, 250; system, Telefunken, 1000; hours, 9m–12m, 2s–5s, 8s–10.30s. Notes, Radio station operated and controlled by the Atlantic Communication Co. Union Sulphur Co., owner of vessel.

IOWA (WFD).—Strike out all particulars.

MEDINA.—Range, 200; system, Marconi, 240; service, PG; hours, N; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Mallory Steamship Co., owner of vessel.

OCEANA.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Bermuda-American Steamship Corporation, owner of vessel.

OHIOAN.—Range, 200; system, Telefunken, 1000; hours, 9m–12m, 2s–5s, 8s–10.30s; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Atlantic Communication Co. American Hawaiian Steamship Co., owner of vessel.

OLEUM.—Strike out system; W. L., 300, 600; strike out rates. Note, Fillmore Condit (Union Oil Co.), owner of vessel.

PASTORES.—Range, 500; system, composite, 1000; service, PG; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Tropical Radio Telegraph Co. Pastores Steamship Corporation, owner of vessel.

POLARINE.—Note, Standard Oil Co. of New York, owner of vessel.

RAYO.—Range, 250; system, Telefunken, 1000; W. L., 300, 600; service, PG; hours, 9m–12m, 2s–5s, 8s–10.30s; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Atlantic Communication Co. Standard Oil Co. of New York, owner of vessel.

ROMA (WTE).—Strike out system; W. L., 300, 600; strike out rates. Note, Union Steamship Co. (Union Oil Co.), owner of vessel.

SARATOGA (KWS).—System, Marconi, 240.

SEGURANCA.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Edward N. Breitung, owner of vessel.

SOCONY.—Range, 250; system, Telefunken, 1000; W. L., 300, 600; service, PG; hours, 9m–12m, 2s–5s, 8s–10.30s; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Atlantic Communication Co. Standard Oil Co. of New York, owner of vessel.

TENADORES.—Range, 500; system, composite, 1000; service, PG; hours, N; rates, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Tropical Radio Telegraph Co. Tenadores Steamship Corporation, owner of vessel.

VENTURA.—Strike out range; strike out system; strike out rates. Note, Oceanic Steamship Co., owner of vessel.

WASHTENAW.—Strike out range; strike out system; strike out hours; strike out rates. Note, Union Steamship Co. (Union Oil Co.), owner of vessel.

WHITTIER.—Strike out range; strike out system; strike out hours; strike out rates. Note, Max Dyer (Union Oil Co.), owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KDE, read: Carrillo (b). Strike out particulars following call signal WFD. **WNO**, read: Pavlof (b).

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

Alterations and corrections to be made in the list of Radio Stations of the United States, edition of July 1, 1914, only.]

PENIKESSE, MASS.—Strike out all particulars

St. Louis, Mo. (9YC).—Call, 9XC; W. L., 700, variable.

SPECIAL LAND STATIONS, ALPHABETICALLY BY CALL SIGNALS.

1ZP—Strike out all particulars. **9YC**—Change call to 9XC, placing information between 9XB and 9XD.

MISCELLANEOUS.

PRICES OF RADIO SERVICE PUBLICATIONS.

The list of Radio Stations of the United States, including amateur stations, is published annually as of July 1, and can be procured from the Superintendent of Documents, Government Printing Office. Washington, D. C., at 15 cents per copy.

Copies of the Radio Communication Laws and Regulations of the United States, including the London Radiotelegraphic Convention, etc., may be procured from the Superintendent of Documents at 15 cents per copy.

All orders and inquiries should be addressed direct to the Superintendent of Documents, Government Printing Office, Washington, D. C. Remittances should be made to the Superintendent of Documents by means of coupons, postal or express orders, or certified checks. Postage stamps will not be accepted.

Inquiries concerning the purchase or subscription for the International List of Radio Stations of the World, the International List of Call Letters, and Supplements to both should be addressed direct to the International Bureau of the Telegraph Union, Radiotelegraphic Service, Berne, Switzerland.

OPERATOR'S SERVICE RECORDS.

All operators are warned that any illegal alteration or addition to the service record on the backs of radio operator licenses may constitute a forgery or alteration, and operators may be prosecuted therefor in addition to the suspension of their licenses.

WAVE LENGTHS AND INTERFERENCE.

With the opening of many high-power stations during the last two years the Bureau has received complaints of interference, particularly on the longer wave lengths.

Heretofore, in the issuing of licenses, in very few instances have wave lengths requested by commercial companies been refused. However, some consideration now must be given to the distribution of wave lengths, especially among high-power stations.

The act of August 13, 1912, to regulate radio communication, was designed to execute, in behalf of the United States, the international radiotelegraph convention, and thus to promote the orderly exchange of radiotelegrams.

Section 2 of the act empowers the Secretary of Commerce to specify the wave length or wave lengths which may be used by commercial stations, and hereafter particular attention will be given to this matter and in most cases but one or two wave lengths above 1600 meters will be authorized for high-power stations.

The attention of those concerned is particularly invited to the London Radiotelegraph Convention service regulations, Article XXXV, paragraph 2, concerning the use of the 1800-meter wave length.

Applicants desiring the use of additional wave lengths must submit with Form 761 a detailed statement of the purpose for which additional wave lengths are desired, and such statement will be considered with regard to wave lengths assigned to other stations.

A request for several wave lengths for the purpose of passing from one wave length to another to avoid interference will not be considered.

RADIO SERVICE PERSONNEL.

Changes March 1, 1915:

The headquarters of L. R. Krumm, chief radio inspector, have been transferred to New York.

W. D. Terrell, radio inspector in charge at New York, has been transferred to the radio division of the Bureau of Navigation at Washington.

V. Ford Greaves, radio engineer of the Bureau of Navigation, has been transferred to the radio field service at large and will make a tour of the various radio districts.

THE OHIO FLOOD.

During the recent flood in the Ohio Valley, the Secretary of Commerce detailed J. F. Dillon, radio inspector in charge at Cleveland, to supervise the operation of commercial and amateur radio stations in the district and to cooperate with the authorities to expedite the exchange of messages relative to life and property.

Fortunately the flood did not reach the proportions of the flood of two years ago, and land-line communication was not interrupted. However, Mr. Dillon arranged with the owners of several powerful amateur stations in the flood district to transmit messages if necessary.

Before leaving the district Mr. Dillon inspected many stations with a view to organizing a chain of stations, so that communication can be maintained in the event of a recurrence of the conditions which prevailed during the flood of 1913. Several special amateur station licenses have been granted upon his recommendations.

FALSE CALL LETTERS.

Recently a list of amateur radio stations, published by private parties, came to the attention of the Bureau, and it was observed that several of the call letters of the stations were irregular and probably in some cases constitute violations of the law.

Receiving stations and sending stations which are not required to be licensed under the law should use two-letter or other unofficial signals. All three-letter combinations and the numbers 1 to 9, followed by two or three letters, are official and can only be used by the stations to which they are assigned by the proper Government authority.

Any station using an official call letter or call signal other than that properly assigned may be prosecuted for a violation of section 7 of the act of August 13, 1912.

COMMERCIAL EXTRA FIRST-GRADE OPERATOR EXAMINATIONS.

Naval and other Government operators who submit satisfactory evidence, certifying 18 months' satisfactory service during the two years previous to the date of filing application as radio operator on a Government vessel or at a Government land station open to general public service, are eligible to take the examination for commercial extra first-grade operator licenses, as such service is essentially the same as private commercial service. Government operators are not required by law to hold operator licenses; therefore the requirement that applicants must hold commercial first-grade licenses is waived in such cases.

When the examination papers of applicants for commercial extra first-grade licenses are forwarded to the Bureau of Navigation, evidence of service should be attached showing the number of months of sea service and number of months of land service, as these particulars are incorporated in the licenses when issued.

LONDON RADIOTELEGRAPH CONVENTION.

The following is a list of the countries which have ratified or adhered to the London radiotelegraph convention, giving dates. The letters "A" and "R" denote adherence and ratification respectively.

Country.	Date.	Country.	Date.
Austria.....	Mar. 12, 1914 R	Japan.....	July 16, 1913 R
Belgium (including Belgian Congo).....	Nov. 23, 1912 R	Mexico.....	Oct. 6, 1913 A
Bosnia-Herzegovina.....	Mar. 12, 1914 R	Monaco.....	Dec. 10, 1912 R
Brazil.....	Dec. 18, 1914 R	Morocco.....	Nov. 2, 1914 R
Bulgaria.....	Apr. 27, 1914 R	Netherlands (including colonies).....	Mar. 20, 1913 R
Chile.....	Apr. 16, 1914 R	Nicaragua.....	May 27, 1914 A
Colombia.....	Aug. 25, 1914 A	Norway.....	Aug. 8, 1913 R
Cyrenaica.....	Jan. 13, 1914 A	Panama.....	July 14, 1914 A
Denmark.....	Apr. 29, 1913 R	Portugal.....	Dec. 2, 1913 R
Egypt.....	Feb. 1, 1913 R	Roumania.....	July 5, 1913 R
France (including French West Africa, French Equatorial Africa, Indo-China, Madagascar, and Tunis).....	Feb. 17, 1914 R	Russia.....	Apr. 5, 1913 R
Germany (including protectorates).....	July 5, 1913 R	San Marino.....	Aug. 1, 1913 R
Greece.....	July 24, 1914 R	Santo Domingo.....	July 1, 1913 R
Guatemala.....	July 10, 1914 A	Sarawak.....	Apr. 23, 1914 A
Honduras.....	Feb. 11, 1915 A	Siam.....	May 20, 1913 R
Hungary.....	Mar. 12, 1914 R	Spain.....	July 8, 1913 R
Italy (including colonies of Eritrea and Somalia).....	June 18, 1913 R	Sweden.....	Aug. 8, 1913 R
		Tripolitana.....	Jan. 13, 1914 A
		United Kingdom of Great Britain and Ireland.....	June 2, 1913 R
		United States of America.....	Feb. 21, 1913 R
		Zanzibar.....	July 14, 1913 A

NORMAL WAVE LENGTH.

Every coast station open to general public service is required to have a normal sending and receiving wave length of 600 meters and all general public service with ship stations must be conducted on 300, 600, or 1800 meters.

The Department interprets the radio laws and the London convention to require that every coast station, excepting general and restricted amateur, shall have a normal wave length of 600 meters for use in case of distress or emergency, and licenses issued for such stations so indicate.

The indication of a 600-meter normal wave length for a special station does not mean that the station shall use this wave length for its *normal* business. All radio communication, other than general public service, must be conducted on some authorized wave length other than 300, 600, or 1800 meters, but the station is required, when open and no special business is being conducted, to listen in with the receiving apparatus tuned to receive the 600-meter wave length and must be prepared to transmit on 600 meters if necessary.

The Radio Laws and Regulations, edition of July 27, 1914, page 52, paragraphs 38 to 50, inclusive, bear on this subject and paragraph 44 provides that all coast stations shall listen in at intervals of not more than 15 minutes and for not less than 2 minutes, with the receiving apparatus adjusted to receive a 600-meter wave length. The act of August 13, 1912, section 4, regulation 11, requires general public-service coast stations to listen in at intervals of not less than 15 minutes and for a period of not less than 2 minutes with the receiver tuned to receive messages of 300-meter wave lengths.

SPECIAL AMATEUR STATION LICENSES.

The organization of a chain of stations in the Ohio flood district and the organization of the American Radio Relay League has caused an influx of applications for special amateur station licenses.

The attention of all concerned is invited to the Laws and Regulations, edition of July 27, 1914, page 55, paragraphs 63 and 64. Applications will not be considered by the Department if these requirements are not complied with.

The Bureau is satisfied that the American Radio Relay League is organized with a view to complying with the Laws and Regulations in all particulars, and radio inspectors in submitting their recommendations to the Department as to the issue of special amateur station licenses will give due consideration to an indorsement on an application by the proper officers of the league.

If all the requirements of the Laws and Regulations are complied with, the Bureau will approve a limited number of special amateur inland station licenses for members of the league, authorizing the use of a wave length of 425 meters.

Very few, if any, special amateur station licenses will be approved for stations along the coast or in localities where the operation of such stations may interfere with maritime, Government, or commercial radio communication. All holders of special amateur station licenses or applicants therefor are warned that such licenses may be suspended or revoked if interference is caused by the working of the stations or if any of the Laws and Regulations are violated.

RADIO RATES INCREASED.

The Marconi Wireless Telegraph Co. of America has been authorized to increase the rate of its station at Miami, Fla., for limited public service with the British Government station at Nassau, Bahamas, from 6 cents to 12 cents per word, effective March 15, 1915.

AMENDMENTS.

The list of Radio Stations of the United States, edition of July 1 1914, is hereby amended, as follows:

Introduction, page 9, sentence commencing on the sixth line should read:

"The rates in the international list are stated in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent."

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OF THIS PUBLICATION MAY BE PROCURED FROM
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WASHINGTON, D. C.
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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, April, 1915—No. 4

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

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E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

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Hours of operation:

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m=a. m.

s=p. m.

12 m=Midday.

12 s=Midnight.

fr.=Franc (francs).

c.=Cents.

OTHER ABBREVIATIONS.

Name =Name of station.

G. loc. =Geographical location (O=west longitude, N=north latitude).

Call =Radio call letters.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths.

Service=Nature of service.

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NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	Range.	System.	Wave lengths.	Service.	Hours.
Brownsville, Tex.*.....	WUZ	250	U. S. Army, 500...	1000	O	X
Fort Barrancas, Fla.*.....	WZD	125	U. S. Army, 500...	1200	O	X
Fort Crockett, Tex.*.....	WUX	30	U. S. Army, 500...	1200	O	X
Fort Howard, Md.*.....	WZB	50	U. S. Army, 60...	1200	O	X
Fort Morgan, Ala. (WUR)*.....	WUR	30	U. S. Army, 500...	1500	O	X
Fort Rosecrans, Cal.*.....	WUS	30	U. S. Army, 500...	1500	O	X
Fort San Jacinto, Tex.*.....	WUY	30	U. S. Army, 500...	1200	O	X
Fort Screven, Ga.*.....	WZA	30	U. S. Army, 500...	1200	O	X
Fort Whitman, Wash.*.....	WZC	100	U. S. Army, 120...	1200	O	X
Fort Royal, S. C. ¹	NAV	.....	U. S. Navy.....	.....	O	N
Victor, Colo. ² , ³	KIW	160	Composite, 600....	600	(4)	9m-11.30m. (7.30s-11s.
Yerba Buena, Cal. ¹ , ⁵	NPG	.....	U. S. Navy.....	.....	O	N

*Radio station operated and controlled by the United States Signal Corps, War Department, Washington, D. C.

¹ Radio station operated and controlled by the United States Naval Radio Service, Radio, Va.

² Radio station operated and controlled by the Ajax Gold Mining Co.

³ G. loc., 0 105° 07' 00" N. 38° 40' 00" W. (Approximate.)

⁴ The station is limited to correspondence with a station at Denver, Colo.

⁵ G. loc., 0 122° 22' 02" N. 37° 48' 30" W.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Name.	Call signal.	System.	Range.	Wave lengths.	Service.	Hours.
Col. Geo. Armistead* ¹	WYG	U. S. Army, 500	150	600	O	X.
Cordova ²	WAR	Kilbourne & Clark		300, 600		
Evangeline ^{3, 4, 5}	KII	Marconi		300, 600		
Genl. R. H. Jackson* ⁶	WYW	U. S. Army, 500	30	400	O	X.
Genl. Robt. Swartout* ⁶	WYU	U. S. Army, 500	30	400	O	X.
Genl. S. B. Holabird* ⁶	WYV	U. S. Army, 500	30	400	O	X.
J. A. Moffett* ⁷	WRE	Marconi		300, 600		
Lieut. A. H. Cushing* ⁸	WYX	U. S. Army, 500	30	400	O	X.
Lieut. Geo. M. Harris* ⁹	WYR	U. S. Army, 500	30	400	O	X.
Mexicano ¹⁰	KGM					
Muskogee ¹¹	KIB			300, 600		
Security ^{12, 13}	KSJ	Marconi				
Tatoosh ^{14, 15}	WPE	Kilbourne & Clark				
Ulysses ¹⁶	KPU					
Zara ^{17, 18}	KZI	Marconi				

*Radio station operated and controlled by the United States Signal Corps, War Department, Washington, D. C.

¹ Army mine planter.

² Alaska Steamship Co., owner of vessel.

³ Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.

⁴ Rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram.

⁵ Alonzo W. Perry, owner of vessel.

⁶ Army tug.

⁷ Standard Oil Co. of California, owner of vessel.

⁸ Pierce Oil Corporation, owner of vessel.

⁹ Standard Oil Co. of New Jersey, owner of vessel.

¹⁰ Standard Oil Co. of New York, owner of vessel.

¹¹ Radio station operated and controlled by the Puget Sound Tug Boat Co., owner of vessel.

¹² Maryland Steel Co., owner of vessel.

¹³ F. J. Littlefield, owner of vessel (yacht).

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
KGM	Mexicano.....b	WUX	Fort Crockett, Tex.....c
KIB	Muskogee.....b	WUY	Fort San Jacinto, Tex.....c
KII	Evangeline.....b	WUZ	Brownsville, Tex.....c
KIW	Victor, Colo.....c	WYG	Col. Geo. Armistead.....b
KPU	Ulysses.....b	WYR	Lieut. Geo. M. Harris.....b
KSJ	Security.....b	WYU	Genl. Robt. Swartout.....b
KZI	Zara.....b	WYV	Genl. S. B. Holabird.....b
NAV	Port Royal, S. C.....c	WYW	Genl. R. H. Jackson.....b
NPG	Yerba Buena, Cal.....c	WYX	Lieut. A. H. Cushing.....b
WAR	Cordova.....c	WZA	Fort Screven, Ga.....c
WPE	Tatoosh.....b	WZB	Fort Howard, Md.....c
WRE	J. A. Moffett.....b	WZC	Fort Whitman, Wash.....c
WUR	Fort Morgan, Ala.....c	WZD	Fort Barrancas, Fla.....c
WUS	Fort Rosecrans, Cal.....c		

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1914, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Auburn, N. Y.....	8YA	300, 440, 500, 600...	P	9-9.30m 2-2.30s 7-7.30s	Edward L. Colby (Colby's Telegraph School).
Beeville, Tex.....	5ZN	200, 450.....	P	X	Ed. Nettleton.
Buffalo, N. Y.....	8ZB	200, 300, 425, 600...	P	X	Nelson E. Holt.
Burlington, Iowa.....	9XL	200 to 650 variable.	P	X	Leslie W. Lyon.
Iowa City, Iowa.....	9YA	585.....	P	X	State University of Iowa.
Kane, Pa.....	8ZK	200, 425.....			John Fleming.
Schenectady, N. Y.....	2ZB	200, 300, 400, 600...	P	X	Wallace L. Brooks.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
2ZB	Second district: Schenectady, N. Y.	8ZB	Eighth district—continued. Buffalo, N. Y.
5ZN	Fifth district: Beeville, Tex.	8ZK	Kane, Pa.
8YA	Eighth district: Auburn, N. Y.	9XL	Ninth district: Burlington, Iowa.
		9YA	Iowa City, Iowa.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ARLINGTON, RADIO, VA.—Notes, Radio station operated and controlled by the United States Naval Radio Service, Radio, Va. The station sends time signals twice daily for five minutes on the wave length of 2,500 meters, commencing at 11.55m and 9.55s, Sundays and holidays included. Final signals at 12m and 10s (time of the meridian 75° west of Greenwich). Every tick of the standard clock of the Naval Observatory, Washington, D. C., is transmitted as a dot, omitting the twenty-ninth second of each minute, the last five seconds of each of the first four minutes, and finally the last 10 seconds of the last minute. The 12m and 10s signal is a dash.

BENTON HARBOR (WBN), MICH.—Strike out all particulars.

BOLINAS, CAL.—G loc. (exact) O 122° 43' 33", N. 37° 54' 48".

CAPE MAY, N. J.—Range, 150; W. L., 300, 550, 600.

EL PASO, TEX.—Strike out all particulars.

EUREKA (KPM), CAL.—Range, 200; system, Marconi; 226; W. L., 300, 600; hours, 8.30m–6s, 7.30s–5m.

EUREKA (NPW), CAL.—Notes, Radio station operated and controlled by the United States Naval Radio Service, Radio, Va. The station sends time signals daily at noon (time of the meridian 120° west of Greenwich), Sundays and holidays excluded, on the wave length of 1,400 meters. Signals same as for Arlington, Radio, Va. Time furnished by Observatory at Navy Yard, Mare Island, Cal.

FORT OMAHA, NEBR.—Strike out all particulars.

FORT WORTH, TEX.—Strike out all particulars.

GRAND MARAIS, MINN.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. The station also communicates with Duluth, Minn.

KEY WEST, FLA.—Notes, Radio station operated and controlled by the United States Naval Radio Service, Radio, Va. The station sends time signals daily at noon (time of the meridian 75° west of Greenwich), Sundays and holidays included, on the wave length of 1,000 meters. Signals same as for Arlington, Radio, Va. Time furnished by the Naval Observatory at Washington, D. C.

MARE ISLAND, CAL.—Notes, Radio station operated and controlled by the United States Naval Radio Service, Radio, Va. The station sends time signals twice daily for five minutes on the wave length of 2,500 meters, commencing at 11.55m and 9.55s, Sundays and holidays included. Final signals at 12m and 10s (time of the meridian 120° west of Greenwich). Signals same as for Arlington, Radio, Va. Time furnished by Observatory at Navy Yard, Mare Island, Cal.

MIAMI, FLA.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. The station also exchanges correspondence with Nassau (Bahamas), charge: 12 c. (0.60 fr.) per word, without minimum.

NEW ORLEANS (NAT), LA.—Notes, Radio station operated and controlled by the United States Naval Radio Service, Radio, Va. The station handles public correspondence in emergencies, when the coast rate will be furnished on request. The operator is generally at the receiver at the beginning of each hour. The station is open for the general benefit of shipping. The station sends out information concerning obstructions in paths of navigation such as wrecks, derelicts, etc., and aids to navigation deranged or misplaced four times daily, at 8m, 12m, 4s, and 8s. The station also sends local weather forecasts at 12m and storm warnings four times at hours mentioned above. The station furnishes above

- information to passing ships at other hours on request. The station sends time signals daily at noon (time of the meridian 75° west of Greenwich), Sundays and holidays included, on the wave length of 1,000 meters. Signals same as for Arlington, Radio, Va. Time furnished by the Naval Observatory, Washington, D. C.
- NEW YORK (WHB).**—Notes, Radio station operated and controlled by the New York Herald Co. The station transmits daily news without charge, using a wave length of 1,610 meters. No charge is made for radiograms to or from naval vessels.
- NORTH HEAD, WASH.**—Notes, Radio station operated and controlled by the United States Naval Radio Service, Radio, Va. The station sends time signals daily at noon (time of the meridian 120° west of Greenwich), Sundays and holidays excluded, on the wave length of 2,000 meters. Signals same as for Arlington, Radio, Va. Time furnished by Observatory at Navy Yard, Mare Island, Cal.
- PHILADELPHIA (WHE), PA.**—Hours, 9m-5.30s.
- SAN DIEGO (NPL), CAL.**—Notes, Radio station operated and controlled by the United States Naval Radio Service, Radio, Va. The station sends time signals daily at noon (time of the meridian 120° west of Greenwich), Sundays and holidays excluded, on the wave length of 2,000 meters. Signals same as for Arlington, Radio, Va. Time furnished by Observatory at Navy Yard, Mare Island, Cal.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- ADELIN SMITH.**—Range, 200; system, Marconi, 120; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- ADVANCE.**—Note, Radio station operated and controlled by the Panama Railroad Co., owner of vessel.
- ALASKAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- ALBERTA.**—System, Marconi; rate, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. F. D. Bourne, owner of vessel (yacht.)
- ALGONQUIN (KVG).**—System, Marconi, 400.
- AL-KI.**—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Border Line Transportation Co., owner of vessel.
- ALLIANCA.**—Note, Radio station operated and controlled by the Panama Railroad Co., owner of vessel.
- AMERICAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- ANCON.**—Note, Radio station operated and controlled by the Panama Railroad Co., owner of vessel.
- ARIZONAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- AROLINE.**—Range, 150; system, Marconi, 240.
- ASTRAL.**—Range, 200; system, Marconi, 240; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of New York, owner of vessel.
- ASUNCION (WTX).**—System, Marconi, 120; W. L., 300, 600; service, PG. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of California, owner of vessel.
- ATLAS (WTT).**—Range, 150; system, Marconi, 290.
- BALBOA.**—Range, 150; system, Marconi, 240; service, PG; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- BRABANT.**—Range, 200; system, Marconi, 480; service, PG; hours, X.
- CALIFORNIA (WOR).**—Range, 150; system, Marconi, 240; service, PG; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. John A. Hooper, owner of vessel.

- CALIFORNIAN (WKC).**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- CAROLINA (KGB).**—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, N; rate, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram.
- CASSANDRA (KYE).**—Note, John J. Doyle, owner of vessel (yacht).
- CHICAGO (WAC).**—System, Kilbourne & Clark. Note, Radio station operated and controlled by the Booth Fisheries Co., owner of vessel.
- CITY OF EVERETT.**—Notes, Radio station operated and controlled by the Standard Oil Co. of New York, owner of vessel.
- CITY OF SOUTH HAVEN.**—Range, 150; system, Marconi, 120; W. L., 300, 600; service, PG; hours, X; rate, 2 c. (0.10 fr.) per word, 20 c. (1 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Chicago and South Haven Steamship Co., owner of vessel.
- COLON (KMX).**—Note, Radio station operated and controlled by the Panama Railroad Co., owner of vessel.
- COLON (WHO).**—Range, 150; system, Marconi, 240; service, PG; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- COLUMBIAN (WKS).**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- COLUSA.**—Range, 200; system, Marconi, 480; service, PG; hours, N; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- CORONADO.**—Range, 100; system, Marconi, 120; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- CRISTOBAL.**—Note, Radio station operated and controlled by the Panama Railroad Co., owner of vessel.
- DAMARA.**—Range, 200; system, Marconi, 480; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- E. G. CROSBY.**—Strike out all particulars.
- EL SEGUNDO.**—Range, 150; system, Marconi, 480; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- EVELYN.**—Strike out all particulars.
- FRANK H. BUCK.**—Range, 200; system, Marconi, 120; service, PG; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram; transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- GEORGIA (WFA).**—Range, 150; system, Marconi, 120; W. L., 300, 600; service, PG; hours, X; rate, 2 c. (0.10 fr.) per word, 20 c. (1 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Goodrich Transit Co., owner of vessel.
- GEORGIANA.**—Rate, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram.
- GULFLIGHT.**—Range, 200; system, Marconi, 240; service, PG; hours, X; rate, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram.
- HAWAIIAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- HENRY T. SCOTT.**—Range, 150; system, Marconi, 480; W. L., 300, 600; service, PG; hours, X; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- HERMOSA.**—Range, 150; system, Marconi, 120; W. L., 300, 500, 600; hours, X; rate, 1 c. (0.05 fr.) per word, 10 c. (0.50 fr.) minimum per radiogram.
- IOWAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- ISTHMIAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- JAMESTOWN.**—Range, 400.
- KANSAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.

- KENTUCKIAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- LAKE LAND.**—Range, 125; system, Marconi, 120.
- LAKEWOOD.**—Range, 100; system, Marconi, 240; W. L., 300, 600; service, PG; hours, X; rate, 2 c. (0.10 fr.) per word, 20 c. (1 fr.) minimum per radiogram.
- LANSING.**—Strike out range; strike out system. Note, Union Steamship Co. (Union Oil Co.), owner of vessel.
- LIGONIER.**—Range, 200; system, Marconi, 400; W. L., 300, 600; service, PG. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Gulf Refining Co., owner of vessel.
- LOUISE.**—Strike out all particulars.
- LYRA (WNF).**—Name, Hattie Luckenbach.
- MARIPOSA.**—System, Kilbourne & Clark.
- METAPAN.**—Range, 500; system, composite, 1000; service, PG; hours, N; rate, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Tropical Radio Telegraph Co. Metapan Steamship Corporation, owner of vessel.
- MEXICAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- MILLINOCKET.**—Hours, X.
- MISSOURIAN.**—Range, 350; system, Telefunken, 1000; hours, X. Notes, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- MOMUS.**—System, Marconi, 400.
- MONTANAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- MULTNOMAH.**—Range, 150; system, Marconi, 120; W. L., 300, 600; service, PG; hours, N; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- NEBRASKAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- NEVADAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- NORTHERN PACIFIC.**—Range, 200; system, Marconi, 1000; service, PG; hours, N; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- NORTH LAND (WNX).**—Range, 150; system, Marconi, 120; W. L., 300, 600; service, PG; hours, N; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- NORTHWESTERN (KUO).**—Range, 200; system, Marconi, 480; service, PG; hours, X; rates, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram.
- NUSHAGAK.**—Range, 150; system, Marconi, 120; W. L., 300, 600; service, PG; hours, N; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Alaska Packers' Association, owner of vessel.
- NYACK.**—Strike out all particulars.
- OHIOAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- OREGONIAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- PACIFIC.**—Range, 200; system, composite, 1000.
- PANAMA (KMH).**—Note, Radio station operated and controlled by the Panama Railroad Co., owner of vessel.
- PANAMAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- PENNSYLVANIAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- RED CROSS.**—Strike out all particulars.
- REDONDO.**—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Alaska Steamship Co., owner of vessel.
- REUCE.**—Strike out system. Note, Columbia River Packers' Association, owner of vessel.

- SANTA RITA.**—Strike out system. Note, United Steamship Co. (Union Oil Co.), owner of vessel.
- SECURANCA.**—System, Marconi, 480; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- SHEBOYGAN.**—Range, 150; system, Marconi; W. L., 300, 600; service, PG; hours, X; rate, 2 c. (0.10 fr.) per word, 20 c. (1 fr.) minimum per radiogram.
- SHENANGO (WET).**—Range, 150; system, Marconi, 120; rate, 2 c. (0.10 fr.) per word, 20 c. (1 fr.) minimum per radiogram.
- S. O. Co. No. 91.**—Range, 150; system, Marconi, 120; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- S. O. Co. No. 93.**—Range, 150; system, Marconi, 120; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- S. O. Co. No. 95.**—Range, 100; system, Marconi, 120; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- ST. NICHOLAS.**—Strike out system. Note, Columbia River Packers' Association, owner of vessel.
- TEXAN.**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- THE HARVESTER.**—Range, 200; system, Marconi, 240; service, PG; hours, X.
- TRINIDADIAN.**—Range, 200; system, Marconi, 400; service, PG; hours, X; rate, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram.
- UNITED STATES.**—Range, 100; system, Marconi, 120; W. L., 300, 600; service, PG; hours, X; rate, 2 c. (0.10 fr.) per word, 20 c. (1 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Indiana Transportation Co., owner of vessel.
- VESTA (KTS).**—Range, 200; system, Marconi, 480; service, PG; hours, X; rates, North and South American service, 4 c. (0.20 fr.) per word, 40 c. (2 fr.) minimum per radiogram, transoceanic service, 8 c. (0.40 fr.) per word, 80 c. (4 fr.) minimum per radiogram.
- VIRGINIA (WFH).**—Range, 150; system, Marconi, 120; hours, X.
- VIRGINIAN (WKV).**—Note, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.
- WARRIOR.**—Name, Wayfarer. Note, Alfred G. Vanderbilt, owner of vessel (yacht).
- WILLIAM P. SNYDER.**—Range, 150; system, Marconi-United, 120.
- WILPEN.**—Range, 150; system, Marconi, 120; W. L., 300, 600; service, PG; hours, X; rate, 2 c. (0.10 fr.) per word, 20 c. (1 fr.) minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Shenango Steamship Co., owner of vessel.
- WM. F. HERRIN.**—System, Marconi, 240.
- YALE.**—Range, 150.
- ZAPORA.**—System, Kilbourne & Clark. Note, International Fisheries Co., owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KYW, read: Wayfarer (b); WNF, read: Hattie Luckenbach (b). Strike out particulars following the call signals KNE, KRL, KRX, WEJ, and WEL.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the list of Radio Stations of the United States, edition of July 1, 1914, only.]

CAMBRIDGE, MASS. (IXP).—W. L., 300, 600, variable.
MEMPHIS, TENN. (5ZD).—W. L., 296.

MISCELLANEOUS.**SPECIAL SERVICE.**

The attention of owners and operators of commercial radio stations is invited to the Laws and Regulations, page 54, paragraphs 49 and 50. General public service may be defined as paid business between coast and ship or ship and ship stations, on the wave lengths of 300, 600, or 1,800 meters, conducted at a speed of not less than 20 words per minute. All special service, such as limited public service or other point-to-point communication, and all press items, must be conducted on some authorized wave length, not interfering with general public service.

STATION LICENSES.

Applications for station licenses (Form 761) must be submitted in the name of the person, company, or corporation controlling and operating the radio station and responsible under the law for the operation and for the radio accounts. The applications must be signed by the applicant or by an officer of the company or corporation.

TRANSMISSION OF TIME SIGNALS BY NAVAL RADIO STATIONS.

The transmission of time signals to vessels at sea by means of radiotelegraphy was first accomplished in the United States in 1905, and this service, enlarged and extended, has continued to the present time. This service is of the greatest value to mariners, as it furnishes a means by which the time, as given by the transmitted signals, may be compared with a ship's chronometer and the error of the chronometer found. Similar comparisons over a number of days enable data to be obtained by which not only the error may be found, but also the chronometer rate; that is, the rate at which it is gaining or losing.

The noontime signals on the Atlantic coast are sent out through the coast radio stations by connection with Western Union telegraph lines from the United States Naval Observatory at Washington, D. C. By the operation of proper relays in electrical circuits, the beats of the seconds of a standard clock in the observatory are sent out broadcast as a series of radio dots, commencing five minutes before the time of the final signal. By omitting certain dots in a series, the comparison between the dots and the beats of the chronometer seconds can be checked until the instant of local noon (seventy-fifth meridian time) is reached. This is marked by a longer dot, which gives the time of exact noon. A comparison with the chronometer time at that instant gives its error referred to the seventy-fifth meridian time. Applying the difference in longitude, namely, five hours, between the seventy-fifth meridian and Greenwich, which is the standard meridian (or 0° longitude), the error of the chronometer referred to Greenwich time is determined.

Time signals are now sent out on the Atlantic coast only through the radio stations at Arlington, Key West, and New Orleans. Signals from Arlington, which reach a zone formerly served by other coast stations, are sent out every day in the year twice a day, viz, at noon and 10 p. m., seventy-fifth meridian time. Time signals from

Key West and New Orleans are sent out daily, including Sundays and holidays, commencing at 11.55 a. m., seventy-fifth meridian time, and ending at local noon.

In case of failure of the Arlington high-power station, the signals are sent out by the small set in the same station, and the stations at Boston, Newport, Norfolk, and Charleston are notified, and they each send the signals broadcast.

On the Pacific coast the time signals are sent broadcast to sea through the naval radio stations at Mare Island, Eureka, and San Diego, Cal., and at North Head, Wash. The controlling clock for each station is in the naval observatory at the Mare Island Navy Yard. Signals from Mare Island are sent out every day from 11.55 to noon, and from 9.55 to 10 p. m., one hundred and twentieth meridian standard time. Those from North Head, Eureka, and San Diego are sent out daily, excluding Sundays and holidays, from 11.55 to noon, one hundred and twentieth meridian standard time.

To get the maximum clearness of signals, the receiving circuit should be tuned to that of the sending station. Arlington and Mare Island send on a 2,500-meter wave length, North Head and San Diego on a 2,000-meter wave length, Eureka on a 1,400-meter wave length, and Key West and New Orleans on a 1,000-meter wave length. On the completion of the new radio station at the training station, Great Lakes, time signals will be transmitted from that station for the benefit of shipping on the Great Lakes, as well as the weather reports for that region, now transmitted by Arlington after the Atlantic coast weather bulletin, following the 10 p. m. time signals.

RENEWAL OF STATION AND OPERATOR LICENSES.

Applicants for renewal of station and operator licenses must submit the originals of old licenses with application for renewal of same. Operators should be sure to have their service records on the backs of their licenses complete at all times, giving the time of service at all stations at which they are employed.

OPERATOR'S LICENSE SUSPENDED.

A commercial operator recently applied to the examining officer at the Philadelphia Navy Yard for a renewal of his first-grade license, and upon examination of his expired license it was found that the service record on the reverse side contained a fraudulent entry.

The operator has been severely reprimanded by the Secretary of Commerce, through the examining officer at the Philadelphia Navy Yard, and his license has been suspended for a period of three months.

COMMERCIAL OPERATOR REPRIMANDED.

The attention of all operators is invited to the Laws and Regulations, page 74, paragraph 210, regarding the use of profane or obscene words in radio communication. Several cases of violations of this regulation have been reported to the Bureau recently. An operator, reported by the radio inspector of the first district, for abbreviating messages in a reprehensible manner, was severely reprimanded by the Secretary of Commerce, and future violations may be subject to more drastic action.

AMATEUR PENALIZED.

An amateur of Portland, Me., was reported recently for operating a station in that city without a license. Judge Hale of the district court of Portland found the amateur guilty and imposed a fine.

RATES.

The rate of 42 cents per word for radiograms transmitted to vessels at sea, at a distance of 400 miles, authorized for the South Wellfleet station of the Marconi Wireless Telegraph Co. of America, was made effective on November 12, 1914. The increase in the ship rates from 2 cents to 4 cents per word and the coast rate from 3 cents to 6 cents per word, authorized for the Pacific stations of the Marconi Wireless Telegraph Co. of America for the North and South American service, was made effective on February 1, 1915.

AMENDMENTS.

[To be cut out and pasted in your copy.]

The Radio Communication Laws of the United States, edition of July 27, 1914, are hereby amended as follows:

Paragraph 153, page 66, should read:

Renewal licenses may be issued to commercial grade operators without examination, provided the service records on the backs of licenses properly certify to three months' satisfactory commercial service during the last six months of the license term. If expired licenses have been lost or destroyed, an affidavit must be submitted attesting the facts regarding the manner in which the license was lost. In such cases, evidence of the required satisfactory commercial service may be submitted in the form of letters, signed by masters and employers.

Operators holding licenses of grades other than commercial, who submit satisfactory evidence to the examining officer, showing actual operation of radio apparatus for three months during the last six months of the license term, may be issued new licenses without examination. Otherwise, applicants for renewals will be examined in the usual manner.

Renewals or new licenses may be issued a reasonable length of time previous to the expiration of existing licenses, but must bear the exact date of issue, which must correspond with the date on the back of Form 756 forwarded to the Commissioner of Navigation.

Service records must be completed and signed only by masters, employers, or the duly authorized agents of either.

Any improper alteration of the service record, or the forgery of masters' or employers' signatures, constitute a violation of the regulations, and the operator may suffer suspension of license for a period not exceeding one year, at the discretion of the Secretary of Commerce.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, May, 1915—No. 5.

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instructions, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the list of Radio Stations of the United States, and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the list of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the list of Radio Stations of the United States and the list of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

ABBREVIATIONS.

INTERNATIONAL ABBREVIATIONS USED IN THIS LIST.

Nature of service:

PG=General public.

PR=Limited public or limited commercial.

P=Private.

O=Government business exclusively.

Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m.

s=p. m.

12 m=Midday.

12 s=Midnight.

c.=Cents.

OTHER ABBREVIATIONS.

Name =Name of station.

G. loc. =Geographical location (O=west longitude, N=north latitude).

Call =Radio call letters.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths.

Service=Nature of service.

Hours =Hours of operation.

Rates =Ship or coast charges in cents. (The rates in the international list are stated in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refers to notes in the Berne list.

Co. =Company.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Longitude and latitude (approximate).	Call signal.	Range.	System.	Wave lengths.
Canton, Ohio * ¹	O 81 22 00 N 40 48 00	WQP	100	.....	500
Denver, Colo.* ²	O 105 00 00 N 39 45 00	KIX	100	.....	600
Kvichak River, Alaska **.....	O 156 37 50 N 59 05 45	KML	20-30	Composite, 1000....	300, 500, 600
Lents, Oreg. ⁴	O 122 35 00 N 45 23 00	KFU	.....	Poulsen arc.....	.....
Mount Vernon, Ohio * ⁵	O 82 31 00 N 40 24 00	WQV	80-90	.....	500
Naknek, Alaska (KMK) * ⁶	O 156 25 00 N 58 43 20	KMK	300	Composite.....	300, 500, 600
Ugashik, Alaska * ⁷	O 157 35 00 N 57 34 28	KMU	50-70	Composite, 400....	300, 500, 600

*The station has private service, with no regular hours.

¹ Radio station operated and controlled by Henry L. Ley. The station is limited to correspondence with a station at Mount Vernon, Ohio.² Radio station operated and controlled by William H. Smith. The station is limited to correspondence with a station of the Ajax Gold Mining Co., Victor, Colo.³ Radio station operated and controlled by the North Alaska Salmon Co. The station is limited to correspondence with ship and shore stations of the North Alaska Salmon Co.⁴ Radio station operated and controlled by the Federal Telegraph Co.⁵ Radio station operated and controlled by Bunyan J. Hyatt. The station is limited to correspondence with a station at Canton, Ohio.⁶ Radio station operated and controlled by the Naknek Packing Co.⁷ Radio station operated and controlled by the Red Salmon Canning Co. The station is limited to correspondence with stations of the Naknek Packing Co.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Name.	Call signal.	System.	Wave lengths.	Service.	Hours.
Columbine ¹	NLL	U. S. Bureau of Standards, 1000.	600, 750, 1000	O	X
Cypress ¹	NLM	do.	600, 750, 1000	O	X
Dolphin (WAU) ² , ³	WAU	Kilbourne & Clark.....	300, 600		
Expansion ⁴	WOH	Composite, 100.....	300, 500, 600	P	X
Gulfcoast ⁵ , ⁶	KUE	Marconi.....	300, 600		
Jim Butler ⁷	WIL	do.			
Nokomis ⁸	WCW				
Northwestern (WAN) ² , ⁹	WAN	Kilbourne & Clark.....	300, 600		
Portland ⁶ , ⁹	WNV	Kilbourne & Clark, 120.	300, 600	PG	X
Ramos ¹⁰	KER	Fessenden.....	300, 600		
Seantor Bailey ² , ¹¹	KGS	Composite, 350.....	300, 600	PG	
Southerner ⁶ , ¹²	KJF	Marconi.....	300, 600	PG	
Sultana ¹³	KZH	do.			
Wapama ¹⁴	WMG	do.			

¹ Radio station operated and controlled by the United States Department of Commerce, Bureau of Lighthouses.

² Alaska Steamship Co., owner of vessel.

³ Rates, 4 c. per word, 40 c. minimum per radiogram.

⁴ Radio station operated and controlled by the North Alaska Salmon Co., owner of vessel.

⁵ Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Gulf Refining Co., owner of vessel.

⁶ Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

⁷ Olson & Mahony, owner of vessel.

⁸ Horace E. Dodge, owner of vessel (yacht).

⁹ The station has a range of 300 miles. Radio station operated and controlled by the Nynco Line (Inc.), owner of vessel.

¹⁰ Sloan, Dannenhower Co., owner of vessel.

¹¹ The station has a range of 200 miles. Radio station operated and controlled by the Steele Towing & Wrecking Co., owner of vessel.

¹² Walker, Armstrong & Co., owner of vessel.

¹³ Mrs. Mary W. Harriman, owner of vessel (yacht).

¹⁴ Charles R. McCormick & Co., owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Station.	Call signal.	Station.
KER	Ramos.....b	NLM	Cypress.....b
KFU	Lents, Oreg.....c	WAN	Northwestern.....b
KGS	Senator Bailey.....b	WAU	Dolphin.....b
KIX	Denver, Colo.....c	WCW	Nokomis.....b
KJF	Southerner.....b	WIL	Jim Butler.....b
KMK	Naknek, Alaska.....c	WMG	Wapama.....b
KML	Kvichak River, Alaska.....c	WNV	Portland.....b
KMU	Ugashik, Alaska.....c	WOH	Expansion.....b
KUE	Gulfcoast.....b	WQP	Canton, Ohio.....c
KZH	Sultana.....b	WQV	Mount Vernon, Ohio.....c
NLL	Columbine.....b		

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the list of radio stations of the United States, edition of July 1, 1914, only.]

Station.	Call signal.	Wave lengths.	Serv-ice.	Hours.	Station controlled by—
Fargo, N. Dak.....	9YF	300, 600.....	P	X	Theo. L. Wanner.
Hartford, Conn. (1ZT).....	1ZT	400, 425.....	P	7s-11s	Clarence D. Tuska.
Montauk, Long Island, N. Y.....	2XE	300, 600, variable.....	P	X	Western Electric Co.
New Castle, Pa.....	8ZN	200, 425.....	P	X	R. L. Patch.
New York, N. Y. (2XR).....	2XR	Variable.....	P	X	Marconi Co.
Orono, Me.....	1XK	280, 590, 800.....	P	X	University of Maine.
Rock Island, Ill.....	9XR	500.....	P	X	Robert K. Karlowa and Ray E. Hall (Tri-City Radio Laboratory).
Schenectady, N. Y. (2XI).....	2XI	1600 to 10,000, variable.....	P	X	General Electric Co.
Warren, Ohio.....	8XW	1800.....	P	X	Goodyear Tire & Rubber Co.
Wichita, Kans.....	9YE	1700.....	P	X	Walter S. Ezell.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1XK	First district:		Eighth district:
1ZT	Orono, Me.....	8XW	Warren, Ohio.
	Hartford, Conn.....	8ZN	New Castle, Pa.
2XE	Second district:		Ninth district:
2XI	Montauk, Long Island, N. Y.....	9XR	Rock Island, Ill.
2XR	Schenectady, N. Y.....	9YE	Wichita, Kans.
	New York, N. Y.....	9YF	Fargo, N. Dak.

ALTERATIONS AND CORRECTIONS.**LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.**

[Alterations and corrections to be made to the list of radio stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

AKRON, OHIO.—G. loc. (approximate) O 81° 40' 00", N. 41° 10' 00"; range, 350; system, Composite, 300-960; W. L., 300, 600, 2070; hours, 8m-4.30s; rate, 2½ c. per word, 25 c. minimum per radiogram. Notes, Radio station operated and controlled by the Goodyear Tire & Rubber Co. The station is limited to correspondence with the station of the Goodyear Tire & Rubber Co. at Detroit, Mich.

BOSTON (NAD), MASS.—Strike out note regarding time signals.

CHARLESTON, S. C.—Strike out note regarding time signals.

DETROIT (WOK), MICH.—G. loc. (approximate) O 83° 10' 00", N. 42° 20' 00"; range, 300; system, Composite, 300 and 600; W. L., 300, 600, 2070; hours, 8.30m-4.30s; rate, 2½ c. per word, 25 c. minimum per radiogram. Notes, Radio station operated and controlled by the Goodyear Tire & Rubber Co. The station is limited to correspondence with the station of the Goodyear Tire & Rubber Co. at Akron, Ohio.

EUREKA (NPW), CAL.—Notes, Radio station operated and controlled by the United States Naval Radio Service, Radio, Va. The station sends time signals daily at noon (time of the meridian 120° west of Greenwich), Sundays and holidays excluded, on the wave length of 1600 meters. Signals same as for Arlington, Radio, Va. Time furnished by Observatory at Navy Yard, Mare Island, Cal.

KAHUKU, HAWAII.—Name, Wahiawa; strike out G. loc. range, 300; system, Marconi-Massie, 600; W. L., 300, 600.

KEY WEST, FLA.—Notes, Radio station operated and controlled by the United States Naval Radio Service, Radio, Va. The station sends time signals daily at noon (time of the meridian 75° west of Greenwich), Sundays and holidays included, on the wave length of 1500 meters. Signals same as for Arlington, Radio, Va. Time furnished by Naval Observatory at Washington, D. C.

MARE ISLAND, CAL.—Notes, Radio station operated and controlled by the United States Naval Radio Service, Radio, Va. The station sends time signals twice daily for five minutes on a wave length of 1600 meters, commencing at 11.55m and 9.55s, Sundays and holidays included. Final signals at 12m and 10s (time of the meridian 120° west of Greenwich). Signals same as for Arlington, Radio, Va. Time furnished by Observatory at Navy Yard, Mare Island, Cal.

NEWPORT (NAF), R. I.—Strike out note regarding time signals.

NORFOLK, VA.—Strike out note regarding time signals.

PORT ROYAL, S. C.—G. loc., O 80° 41' 00", N. 32° 22' 00".

SEA GATE, N. Y.—System, Marconi, 120 and 420.

TATOOSH, WASH.—Strike out note regarding time signals.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

Alterations and corrections to be made to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

ADMIRAL DEWEY.—Strike out range; system, Kilbourne & Clark. Note, Radio station operated and controlled by the Pacific-Alaska Navigation Co., owner of vessel.

ADMIRAL FARRAGUT.—Strike out range; system, Kilbourne & Clark; W. L., 300, 600. Note, Radio station operated and controlled by the Pacific-Alaska Navigation Co., owner of vessel.

ADMIRAL SCHLEY.—Strike out range; system, Kilbourne & Clark. Note, Radio station operated and controlled by the Pacific-Alaska Navigation Co., owner of vessel.

ADVENTURESS.—Strike out all particulars.

BELUGA.—Strike out all particulars.

BERTHA.—Strike out all particulars.

BRILLIANT (KTI).—System, Marconi, 1000.

BUENAVENTURA.—Range, 200; system, Marconi, 480; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

CALIFORNIAN (WKC).—Range, 200; hours, 9m-12m, 2s-5s, 8s-10.30s; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.

CAMAGUEY.—Range, 200; system, Marconi, 400; service, PG; hours, N; rate, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. New York and Cuba Mail Steamship Co. (Ward Line), owner of vessel.

CHARLES E. HARWOOD.—Range, 200; system, Marconi, 300; service, PG; hours, X.

CITY OF TOPEKA.—System, Marconi, 400.

COL. E. L. DRAKE.—System, Marconi, 120; W. L., 300, 600; service, PG.

COLORADO (KEA).—Range, 200; system, Marconi, 120; W. L., 300, 600; service, PG; hours, N; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Mallory Steamship Co., owner of vessel.

C. W. MORSE.—Range, 150; system, Marconi, 400; rate, 4 c. per word, 40 c. minimum per radiogram.

DENVER (KED).—Strike out all particulars.

EDWARD L. DOHENY.—Range, 150; system, Marconi, 300; service, PG; hours, X.

GEO. W. ELDER.—Range, 200; system, Marconi, 120; W. L., 300, 600; service, PG; hours, N; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

GRACE DOLLAR.—Strike out range; strike out system. Note, Grace Dollar Steamship Co., owner of vessel.

HONOLULU.—System, Marconi, 480.

ILLINOIS (KTH).—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, X; rates, North and South American service; 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Texas Steamship Co., owner of vessel.

INDEPENDENT.—Strike out system; strike out rates. Note, National Independent Fisheries Co., owner of vessel.

- J. A. CHANSLOR.**—Range, 200; system, Marconi, 120; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- J. A. MOFFETT.**—Range, 150; system, Marconi, 1000; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- J. M. GUFFEY.**—System, Marconi, 240; hours, X.
- JOHN D. ARCHBOLD.**—Range, 200; system, Marconi, 240; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of New Jersey, owner of vessel.
- LARIMER.**—System, Marconi, 240; hours, X.
- LYDONIA.**—Range, 150; system, Marconi, 500; W. L., 300, 600; service, PG; hours, X; rate, 2 c. per word, 20 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. W. A. Lydon, owner of vessel (yacht).
- MATSONIA.**—System, Marconi, 480.
- MEXICANO.**—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, X; rate, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Pierce Oil Corporation, owner of vessel.
- MOHAWK (KXE).**—System, Fessenden, 260; W. L., 300, 550, 600.
- MOHEGAN.**—System, Fessenden, 260; W. L., 300, 550, 600.
- NECHES.**—Range, 200; system, Marconi, 240; service, PG; hours, X; rates, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Mallory Steamship Co., owner of vessel.
- NORMAN BRIDGE.**—Range, 200; system, Marconi, 300; service, PG; hours, X.
- NORTH LAND (KJD).**—System, Marconi, 400.
- NUSHAGAK.**—Strike out system. Note, Alaska Packer's Association, owner of vessel.
- PARAISO.**—Range, 150; system, Marconi, 240; hours, N; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Craig Shipbuilding Co., owner of vessel.
- PEQUONNOCK.**—System, Fessenden, 260; W. L., 300, 550, 600.
- PERFECTION.**—Range, 200; system, Marconi, 1000; service, PG; hours, X. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of New York, owner of vessel.
- PILOT BOY.**—Range, 100; system, Marconi, 400; service, PG; hours, 8m-11m, 2s-5s, 7s-8s; rates, 4c. per word, 40 c. minimum per radiogram.
- PLATURIA.**—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Oil Co. of New Jersey, owner of vessel.
- PLYMOUTH.**—W. L., 300, 550, 600.
- PRINCETON (KST).**—Note, Standard Oil Co. of New Jersey, owner of vessel.
- PROVIDENCE.**—W. L., 300, 550, 600.
- RADIANT.**—Range, 200; system, Marconi, 1000; service, PG; hours, X.
- REDONDO.**—Strike out range; strike out system; strike out hours. Note, Alaska Steamship Co., owner of vessel.
- ROBERT DOLLAR.**—Strike out all particulars.
- SANTA CRUZ (WBD).**—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- SANTA MARIA (WTF).**—Strike out range; system, Poulsen arc; strike out rates. Note, United Steamship Co. (Union Oil Co.), owner of vessel.
- SANTA ROSALIA.**—Range, 200; system, Marconi, 480; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- SANTIAGO.**—Range, 200; system, Marconi, 400; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. New York & Cuba Mail Steamship Co. (Ward Line), owner of vessel.

- SATILLA.**—Range, 200; system, Marconi, 120; W. L., 300, 600; service, PG; hours, X; rates, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Atlantic, Gulf, and West Indies Steamship Lines, owner of vessel.
- SHEBOYGAN.**—Strike out all particulars.
- SOMERSET (KSU).**—Note, Standard Oil Co. of New Jersey, owner of vessel.
- STANLEY DOLLAR.**—Strike out system. Note, Dollar Steamship Line, owner of vessel.
- STARR.**—System, Kilbourne & Clark. Note, Radio station operated and controlled by the San Juan Fishing and Packing Co., owner of vessel.
- ST. FRANCIS.**—Strike out system; strike out rates. Note, Libby, McNeill & Libby, owner of vessel.
- ST. HELENS.**—System, Marconi, 120; W. L., 300, 600; service, PG.
- ST. LOUIS (KSL).**—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, N; rates, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. International Mercantile Marine Co. (American Line), owner of vessel.
- TARRAGON.**—Strike out all particulars.
- UNITED STATES.**—Strike out all particulars.
- VENETIA.**—System, Marconi. Note, Radio station operated and controlled by J. D. Spreckels, owner of vessel (yacht).
- W. B. FLINT.**—Strike out system; strike out rates. Note, Libby, McNeill & Libby, owner of vessel.
- WILD DUCK.**—Range, 150; system, Marconi, 400; W. L., 300, 600; service, PG; hours, X; rate, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Gulf Refining Co., owner of vessel (yacht).
- WILLAMETTE.**—Range, 150; system, Marconi, 120; W. L., 300, 600; service, PG; hours, N; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- W. S. PORTER.**—Range, 150; system, Marconi, 120; W. L., 300, 600; service, PG.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KHK, read: Wahiawa, Hawaii (c). Strike out particulars following the call signals KED, KYV, NZZ, WBR, WFL, WIT, WLB, and WSM.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the list of Radio Stations of the United States, edition of July 1, 1914, only.]

- MEMPHIS, TENN. (5XC).**—W. L., 425 variable to 600.
- PITTSFIELD, MASS.**—W. L., 600, 1600 variable to 6000.
- TAKOMA PARK, MD.**—W. L., 500, 2000.

MISCELLANEOUS.

TRANSMISSION OF WEATHER REPORTS BY NAVAL RADIO STATIONS.

Through cooperation with local offices of the United States Weather Bureau, weather forecasts are sent broadcast to sea through naval coast radio stations at certain times, varying with the locality. Coast stations are generally prepared to give local forecasts to passing vessels without charge, on request. Storm warnings are sent whenever received and the daily weather bulletins are distributed by the naval radio stations at Arlington, Va., and Key West, Fla., a few minutes after the 10 p. m. time signal. These bulletins consist of two parts.

The first part contains code letters and figures which express the actual weather conditions at 8 p. m., seventy-fifth meridian time, on the day of distribution, at certain points along the eastern coast of North America, one point along the Gulf of Mexico, and one at Bermuda.

The second part of the bulletin contains a special forecast of the probable winds to be experienced a hundred miles or so off shore, made by the United States Weather Bureau, for distribution to shipmasters. The second part of the bulletin also contains warnings of severe storms along the coasts, as occasions for such warnings may arise.

Immediately following this bulletin, a weather bulletin for certain points along the Great Lakes is sent broadcast by the naval radio station at Arlington, Va., consisting of two parts. The first part contains code letters and figures which express the actual weather conditions at 8 p. m., seventy-fifth meridian time, on the day of distribution, at certain points along the Lakes. The second part of the bulletin contains a special forecast of the probable winds to be experienced on the Lakes, during the season of navigation—about April 15 to December 10.

The points for which weather reports are furnished are designated as follows: *For Atlantic coast and Gulf points*, S = Sydney, T = Nantucket, DB = Delaware Breakwater, H = Hatteras, C = Charleston, K = Key West, P = Pensacola, and B = Bermuda; *for points on the Great Lakes*, Du = Duluth, M = Marquette, U = Sault Ste. Marie, G = Green Bay, Ch = Chicago, L = Alpena, D = Detroit, V = Cleveland and F = Buffalo.

All bulletins begin with the letters U. S. W. B. (United States Weather Bureau) and the weather conditions follow. The first three figures of a report represent the barometric pressure in inches (002 = 30.02); the next figure, the fourth in sequence, represents the direction of the wind to the eight points of the compass: 1 = north, 2 = northeast, 3 = east, 4 = southeast, 5 = south, 6 = southwest, 7 = west, 8 = northwest and 0 = calm. The fifth figure represents the force of the wind on the Beaufort Scale, given below.

BEAUFORT SCALE OF WIND FORCE.

Number and designation.	Statute miles per hour.	Nautical miles per hour.
0 Calm.....	0 to 3	0 to 2.6
1 Light air.....	8	6.9
2 Light breeze.....	13	11.3
3 Gentle breeze.....	18	15.6
4 Moderate breeze.....	23	20.0
5 Fresh breeze.....	28	24.3
6 Strong breeze.....	34	29.5
7 Moderate gale.....	40	34.7
8 Fresh gale.....	48	41.6
9 Strong gale.....	56	48.6
10 Whole gale.....	65	56.4
11 Storm.....	75	65.1
12 Hurricane.....	90 and over.	78.1 and over.

In order to simplify the code, no provision has been made for wind force greater than 9, strong gale, on the Beaufort Scale. Whenever winds of force greater than 9 occur, the number representing them is given in words instead of figures, thus: Ten, eleven, etc.

EXAMPLES OF CODE.

U S W B S 96465 T 91674 DB 94686 H 99886 C 01214
K 02622 P 03613 B 00065

Translation.

United States Weather Bureau.

Station.	Pressure.	Wind.	
		Direction.	Force. ¹
Sydney.....	29.64	SW	5
Nantucket.....	29.16	W	4
Delaware Breakwater.....	29.46	NW	6
Hatteras.....	29.98	NW	6
Charleston.....	30.12	N	4
Key West.....	30.26	NE	2
Pensacola.....	30.36	N	3
Bermuda.....	30.00	SW	5

¹ See Beaufort Scale.

U S W B Du 95826 M 97635 U 00443 G 96046 Ch 95667
 L 00644 D 00842 V 01054 F 01656

Translation.

United States Weather Bureau.

Station.	Pressure.	Wind.	
		Direction.	Force. ¹
Duluth.....	29.58	NE	6
Marquette.....	29.76	E	5
Sault Ste. Marie.....	30.04	SE	3
Green Bay.....	29.60	SE	6
Chicago.....	29.56	SW	7
Alpena.....	30.06	SE	4
Detroit.....	30.08	SE	2
Cleveland.....	30.10	S	4
Buffalo.....	30.16	S	6

¹See Beaufort scale.

NOTICE RELATIVE TO HANDLING OF OFFICIAL RADIOGRAMS BY NAVAL RADIO SERVICE.

When radiograms from ships other than naval vessels relating to official business of the United States (those having the word "Govt." preceding the address) are forwarded through naval radio shore stations, they will be transferred to forwarding lines without any further attempt to relay. These "Govt." messages include those addressed to the Weather Bureau or Observer.

In the case of all "Govt." messages originating on ships, Government or otherwise, in Alaskan waters, forwarded through naval radio shore stations, destined to points in the United States, they will be relayed by naval radio to North Head if for points outside of California, or to Eureka if for points in California, and there transferred to forwarding lines. The preceding applies where no routing instructions are given, but messages will be routed otherwise if so directed by the station of origin.

No charges will be made by the Naval Radio Service for the transmission of these "Govt." messages, but it will in all cases look to the station of origin for all forwarding charges at Government rates.

RADIO-SERVICE PERSONNEL.

V. Ford Greaves, radio engineer of the Bureau, is making a tour of inspection of the Pacific-coast districts.

Harry Sadenwater, of New York City, has been appointed as an assistant radio inspector in the office of the chief radio inspector at that port.

George B. MacMahon, clerk in the New York office, has been granted six months' leave without pay, on account of ill health, and is now on the Pacific coast.

CHANGE IN ARMY RATES.

The following changes in the ship and coast radio charges of the United States Army Radio Service, approved by the Secretary of War, will become effective on July 1, 1915:

The radio rate for stations of the United States Army Radio Service is six cents per word for shore stations and four cents per word for ship stations, ten-word minimum.

The charge, where the radio service is performed wholly between Army ship and shore stations, is, therefore, ten cents per word, and between two Army ship stations, eight cents per word.

COMMERCIAL EXTRA FIRST-GRADE OPERATORS.

The names of the following operators have been added to the list of those to whom commercial extra first-grade licenses have been issued by the Secretary of Commerce, as a reward for long and efficient service: Leo. F. Whitehead, Boston, Mass., and Walter John Lynch, New York, N. Y.

AMENDMENTS.

[To be cut out and pasted in your copy.]

The Radio Communication Laws of the United States, edition of July 27, 1914, are hereby amended as follows:

Paragraph 153, page 66, should read:

a. Renewal licenses may be issued to commercial grade operators without examination, provided the service records on the backs of licenses properly certify to three months' satisfactory commercial service during the last six months of the license term. If expired licenses have been lost or destroyed, an affidavit must be submitted attesting the facts regarding the manner in which the license was lost. In such cases, evidence of the required satisfactory commercial service may be submitted in the form of letters, signed by masters and employers.

b. Operators holding licenses of grades other than commercial, who submit satisfactory evidence to the examining officer, showing actual operation of radio apparatus for three months during the last six months of the license term, may be issued new licenses without examination. Otherwise, applicants for renewals will be examined in the usual manner.

c. Renewals or new licenses may be issued a reasonable length of time previous to the expiration of existing licenses, but must bear

the exact date of issue, which must correspond with the date on the back of Form 756 forwarded to the Commissioner of Navigation.

d. Operators who fail to apply for renewal of their licenses on or prior to the date of expiration must be reexamined. If, because of circumstances over which the applicant has no control, an operator is unable to apply for renewal of license on or prior to the date of expiration, an affidavit may be submitted to the Commissioner of Navigation through the radio inspector or examining officer, attesting to the facts, which will be considered by the Commissioner of Navigation, who will advise the radio inspector or examining officer in regard to the issue of a renewal of the license without reexamination.

e. Service records must be completed and signed only by masters, employers, or the duly authorized agents of either.

f. Any improper alteration of the service record, or the forgery of masters' or employers' signatures, constitute a violation of the regulations, and the operator may suffer suspension of license for a period not exceeding one year, at the discretion of the Secretary of Commerce.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, June, 1915—No. 6

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the list of Radio Stations of the United States, and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the list of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the list of Radio Stations of the United States and the list of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:

E. F. SWEET,
Acting Secretary.

ABBREVIATIONS.**INTERNATIONAL ABBREVIATIONS USED IN THIS LIST.****Nature of service:**

PG=General public.

PR=Limited public.

P=Private.

O=Government business exclusively.

Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m.

s=p. m.

12 m=Midday.

12 s=Midnight.

c.=Cents.

OTHER ABBREVIATIONS.

Name =Name of station.

G. loc. =Geographical location (O=west longitude, N=north latitude).

Call =Radio call letters.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths.

Service=Nature of service.

Hours =Hours of operation.

Rates =Ship or coast charges in cents. (The rates in the international list are stated in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refers to notes in the Berne list.

Co. =Company.

NEW STATIONS.**LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.**

[Additions to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Longitude and latitude (approximate).	Call signal.	Range.	System.	Wave lengths.
Akutan, Alaska ¹		KMW			
Albina, Oreg. ²		KGN			
Egegak, Alaska ² , ⁴	O 157 39 00	KMF	100-300	Composite, 300....	300, 600
	N 58 17 00				
Nushagak, Alaska (KMG) ² , ⁴	O 158 32 00	KMG	100-300	Composite, 300....	300, 600
	N 58 42 00				
Roche Harbor, Wash. ⁵		KRW			
Seattle, Wash. (KPE) ⁶ , ⁷	O 122 20 00	KPE	50	Composite, 150....	300, 525, 600
	N 47 37 00				
Underwood, Wash. ²		KGO			

¹ Radio station operated and controlled by the North Pacific Sea Products Co.² Radio station operated and controlled by the Northwestern Electric Co.³ The station has private service, with no regular hours.⁴ Radio station operated and controlled by the North Alaska Salmon Co. The station is limited to correspondence with ship and land stations of the North Alaska Salmon Co.⁵ Radio station operated and controlled by the Tacoma & Roche Harbor Lime Co.⁶ Service, PR; hours, 8m-5s, except Sundays and holidays.⁷ Radio station operated and controlled by the city of Seattle (harbor department). The station corresponds with the harbor patrol boats and all vessels entering Puget Sound.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Name.	Call signal.	System.	Wave lengths.	Service.	Hours.
Achilles.....	KPT		300, 600		
Costa Rica ^{1, 2, 3}	WQI	Composite, 480.....	300, 600	PG	N
Edith ^{2, 4, 5}	WAE	Kilbourne & Clark, 120....	300, 600	PG	X
Matinicock ⁶	KID		300, 600		
Restorer ^{4, 7, 8}	WIU	Marconi.....	300, 600	P	N
San Mateo ⁹	KLV		300, 600		
San Pablo ¹⁰	KLW		300, 600		
San Pedro ¹¹	KLX		300, 600		
Santa Catalina ^{4, 7, 12, 13}	WBC	Marconi, 480.....	300, 600	PG	X
Sarnia ^{7, 12, 14, 15}	KVR	Marconi, 240.....	300, 600	PG	N
Seward ^{2, 4, 5}	WAV	Kilbourne & Clark, 120....	300, 600	PG	X
Siberia ¹⁶	KVS	Marconi.....	300, 600		
Standard ⁶	KIC				
Victoria ^{2, 4, 5}	WAD	Kilbourne & Clark, 120....	300, 600	PG	N

¹ Range, 500 miles.

² Rates, 4 c. per word, 40 c. minimum per radiogram.

³ Radio station operated and controlled by the Bristol Bay Packing Co., owner of vessel.

⁴ Range, 100 miles.

⁵ Radio station operated and controlled by the Alaska Steamship Co., owner of vessel.

⁶ Standard Oil Co. of New Jersey, owner of vessel.

⁷ Rates, North and South American service 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

⁸ Radio station operated and controlled by the Commercial Pacific Cable Co., owner of vessel.

⁹ San Mateo Steamship Corporation, owner of vessel.

¹⁰ San Pablo Steamship Corporation, owner of vessel.

¹¹ San Pedro Steamship Corporation, owner of vessel.

¹² Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.

¹³ Atlantic & Pacific Steamship Co., owner of vessel.

¹⁴ Range, 200 miles.

¹⁵ Sarnia Steamship Corporation, owner of vessel.

¹⁶ Siberia Steamship Corporation, owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b—ship station; c—land station.]

Call signal.	Station.	Call signal.	Station.
KGN	Albina, Oreg.....c	KPT	Achilles.....b
KGO	Underwood, Wash.....c	KRW	Roche Harbor, Wash.....c
KIC	Standard.....b	KVR	Sarnia.....b
KID	Matinicock.....b	KVS	Siberia.....b
KLV	San Mateo.....b	WAD	Victoria.....b
KLW	San Pablo.....b	WAE	Edith.....b
KLX	San Pedro.....b	WAV	Seward.....b
KMF	Egegak, Alaska.....c	WBC	Santa Catalina.....b
KMG	Nushagak, Alaska.....c	WIU	Restorer.....b
KMW	Akutan, Alaska.....c	WQI	Costa Rica.....b
KPE	Seattle, Wash.....c		

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the list of Radio Stations of the United States, edition of July 1, 1914, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Algona, Wash.....	7XU	300, 600, 4000 variable.	P	X	Universal High Power Telephone Co.
Grand Coteau, La.....	5ZQ	450.....	P	X	St. Charles College.
Ithaca, N. Y.....	8YC	300, 425.....	P	X	Cornell University.
Lawrence, Kans.....	9XP	400, 550, 800, variable..	P	X	University of Kansas.
Pittsburgh, Pa.....	8YI	300, 425.....	P	X	University of Pittsburgh.
Providence, R. I.....	12P	200, 300, 425, 600.....	P	X	Ralph C. Watrous.
Rockland, Me.....	12R	200, 300, 450, 600.....	P	X	Edward L. Norton.
Seattle, Wash. (7XK)...	7XK	600, 1000, 1400, 2000, 4000, variable.	P	X	Kilbourne & Clark Mfg. Co.
Seattle, Wash. (7XM)...	7XM	300, 600, 1400, variable.	P	X	Wireless Instrument Co.
Worcester, Mass.....	12W	200, 425.....	P	X	Wm. H. Allison.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1ZP	First district:		Seventh district—Continued:
1ZR	Providence, R. I.	7XM	Seattle, Wash.
1ZW	Rockland, Me.	7XU	Algona, Wash.
	Worcester, Mass.		Eighth district:
5ZQ	Fifth district:	8YC	Ithaca, N. Y.
	Grand Coteau, La.	8YI	Pittsburgh, Pa.
7XK	Seventh district:	9XP	Ninth district:
	Seattle, Wash.		Lawrence, Kans.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ELLAMAR, ALASKA.—Strike out all particulars.

FRIDAY HARBOR, WASH.—Strike out all particulars.

JUALIN, ALASKA.—Strike out all particulars.

MARSHFIELD, OREG.—Range, 250; system, Marconi, 240; W. L., 300, 600.

NEWPORT (WCI), R. I.—Range, 75; system, Fessenden, 1000; W. L., 300, 550, 600; rates, vessels plying between ports within 200 miles of New York, N. Y., 3 c. per word, 30 c. minimum per radiogram; North and South American service, 6 c. per word, 60 c. minimum per radiogram; transoceanic service, 12 c. per word, \$1.20 minimum per radiogram.

NEW YORK (WHD), N. Y.—Strike out all particulars.

PASSAGRILLE, FLA.—Ship rate, 6 c. per word, cable count, no minimum.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ADMIRAL DEWEY.—Range, 100; system, Kilbourne & Clark, 120.

ADMIRAL FARRAGUT.—Range, 100; system, Kilbourne & Clark, 120.

ADMIRAL SCHLEY.—Range, 100; system, Kilbourne & Clark, 120.

ADMIRAL WATSON.—Hours, N.

ALAMEDA.—Range, 100; system, Kilbourne & Clark, 120; rate, 4 c. per word, 40 c. minimum per radiogram. Note, Radio station operated and controlled by the Alaska Steamship Co., owner of vessel.

ALOHA.—Range, 200; system, Marconi, 1000; W. L., 300, 600; service, PG; hours, N; rate, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Arthur Curtiss James, owner of vessel (yacht).

AMERICAN.—Hours, X.

ANTILLA.—Range, 200; system, Marconi, 400; service, PG; rate, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. New York & Cuba Mail Steamship Co. (Ward Line), owner of vessel.

ATLANTIC CITY.—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; rate, 4 c. per word, 40 c. minimum per radiogram.

BANTU.—Range, 200; system, Marconi, 400; service, PG; hours, X; rate, 4 c. per word, 40 c. minimum per radiogram.

BATON ROUGE.—Range, 200; system, Telefunken, 1000; service, PG; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Standard Oil Co. of New Jersey, owner of vessel.

BAYAMON.—Strike out all particulars.

BAYWAY.—Range, 200; system, Telefunken, 1000; service, PG; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Standard Oil Co. of New Jersey, owner of vessel.

- BELFAST.—System, Marconi, 400.
- BERLIN.—Range, 100; system, Marconi, 480; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- BEVERLY.—Range, 50; system, Fessenden, 260; service, PG; hours, N; rate, 3 c. per word, 30 c. minimum per radiogram. Notes, Radio station operated and controlled by the National Electric Signaling Co. Colonial Navigation Co., owner of vessel.
- BORINQUEN.—Strike out all particulars.
- BRABANT.—System, Marconi, 240; rate, 4 c. per word, 40 c. minimum per radiogram.
- BROCKTON.—Range, 50; system, Fessenden, 260; service, PG; hours, N; rate, 3 c. per word, 30 c. minimum per radiogram. Notes, Radio station operated and controlled by the National Electric Signaling Co. Colonial Navigation Co., owner of vessel.
- CALIFORNIA (KYQ).—Range, 200; system, Marconi, 240; service, PG; hours, N; rate, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Mrs. Clara B. Stocker, owner of vessel (yacht).
- CALORIA.—Range, 200; system, Marconi, 480; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- CHARLTON HALL.—Range, 200; system, Marconi, 240; service PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- CHICAGO (WAG).—Range, 100; system, Kilbourne & Clark, 120; W. L., 300, 600; service, PG; hours, X.
- CHINA.—System, Marconi, 120; W. L., 300, 600; service, PG. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Pacific Mail Steamship Co., owner of vessel.
- CHIPPEWA (WBH).—Strike out all particulars.
- CITY OF MACON.—Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- CITY OF MEMPHIS.—System, Marconi, 400; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- CITY OF PANAMA.—Strike out all particulars.
- CITY OF SEATTLE.—Range, 100; system, Marconi, 480; W. L., 300, 600; service, PG; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- COL. JAMES M. SCHOONMAKER.—Strike out all particulars.
- COLUMBIA (WPW).—Strike out all particulars.
- CRASTER HALL.—Range, 200; system, Marconi, 240; service, PG; hours, X. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. U. S. Steel Products Co., owner of vessel.
- CROFTON HALL.—Range, 200; system, Marconi, 120; service, PG; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- C. W. MORSE.—Strike out all particulars.
- CYPRUS.—Range, 200; system, Marconi, 1000; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- DAMARA.—System, Marconi, 240.
- DELHI.—Strike out all particulars.
- DESPATCH.—Range, 150; system, Marconi, 240; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- DIRIGO.—Strike out all particulars.
- DOLPHIN (WAU).—Range, 100; system, Kilbourne & Clark, 120; service, PG; hours, N. Note, Radio station operated and controlled by the Alaska Steamship Co., owner of vessel.
- EVANGELINE.—Range, 200; system, Marconi, 120; service, PG; hours, N; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- EXPLORER.—Range, 150; system, Telefunken; hours, N. Notes, Radio station operated and controlled by the United States Department of Commerce, Coast and Geodetic Survey. Surveying ship.

F. A. KILBURN.—System, Marconi, 400.

FORWARD (KPF).—Range, 50; system, Fessenden, 260; W. L., 300, 450, 500, 550, 600; service, PG; hours, N; rate, 6 c. per word, 60 c. minimum per radiogram.

Notes, Radio station operated and controlled by the National Electric Signaling Co. Yankee Salvage Association, owner of vessel.

GENL. PETTIBONE.—Strike out all particulars.

GLORY OF THE SEAS.—Strike out all particulars.

GOLIAH.—Range, 100; system, Kilbourne & Clark, 120; W. L., 300, 600; service, PG; hours, X; rate, 4 c. per word, 40 c. minimum per radiogram. Note, Radio station operated and controlled by the Puget Sound Tug Boat Co., owner of vessel.

GOVERNOR DINGLEY.—System, Marconi, 400.

GRAYSON.—Strike out all particulars.

GUANTANAMO.—Range, 200; system, Marconi, 400; service, PG; hours, N; rate 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. New York & Cuba Mail Steamship Co. (Ward Line) owner of vessel.

GULFOIL.—System, Marconi, 480; hours, X.

HAWAIIAN.—Range, 200; system, Telefunken, 1000; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

HOWICK HALL.—Range, 200; system, Marconi, 240; service, PG; hours, N.

HUMBOLDT.—Range, 100; W. L., 300, 600; service, PG; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

HYADES.—Range, 140; system, Marconi, 480; W. L., 300, 600; service, PG.

I. D. FLETCHER.—Range, 200; system, Marconi, 400; W. L., 300, 600; service, PG; hours, N; rate, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Coast Transit Co., owner of vessel.

I. J. MERRITT.—Range, 100; system, Clapp-Eastham, 500; W. L., 300, 600; service, PG; hours, X; rate, 4 c. per word, 40 c. minimum per radiogram. Note, Radio station operated and controlled by the Merritt & Chapman Derrick & Wrecking Co., owner of vessel.

IOWAN.—Hours, X.

IROQUOIS (WBG).—Strike out all particulars.

JAMES DUANE.—Strike out all particulars.

JEFFERSON (WAJ).—Range, 100; system, Kilbourne & Clark, 120; service, PG; hours, N; rate, 4 c. per word, 40 c. minimum per radiogram. Note, Radio station operated and controlled by the Alaska Steamship Co., owner of vessel.

JIM BUTLER.—Range, 150; system, Marconi, 480; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Olson & Mahony, owner of vessel.

J. L. LUCKENBACH.—Range, 200; system, Marconi, 240; service, PG; hours, N; rate, 4 c. per word, 40 c. minimum per radiogram.

JOHN D. ROCKEFELLER.—Range, 300; system, Marconi, 240; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

JOSEPH PULITZER.—Strike out all particulars.

KANSAN.—Range, 200; system, Telefunken, 1000, W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

KENTRA.—Range, 200; system, Marconi, 400; service, PG; hours, N; rate, 4 c. per word, 40 c. minimum per radiogram.

KENTUCKIAN.—Range, 200; system, Telefunken, 1000; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

KROONLAND.—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, N; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

KVICHAK.—Range, 300; system, Kilbourne & Clark, 120; W. L., 300, 600; service, PG; hours, N; rate, 4 c. per word, 40 c. minimum per radiogram. Note, Radio station operated and controlled by the Alaska Packers' Association, owner of vessel.

LATOUCHE.—Range, 100; system, Kilbourne & Clark, 120; service, PG; hours, X; rate, 4 c. per word, 40 c. minimum per radiogram. Note, Radio station operated and controlled by the Alaska Steamship Co., owner of vessel.

- I EELANAW.**—System, Marconi, 120; W. L., 300, 600; service, PG; Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Harris, Irby & Vose, owner of vessel.
- LLAMA.**—Range, 200; system, Marconi, 240; service, PG; hours, N.
- MACKINAW.**—Strike out all particulars.
- MARACAS.**—Range, 200; system, Marconi, 400; service, PG; hours, N; rate, 8 c. per word, 80 c. minimum per radiogram.
- MARIPOSA.**—Range, 100; system, Kilbourne & Clark, 120; W. L., 300, 600; service, PG; rate, 4 c. per word, 40 c. minimum per radiogram. Note, Radio station operated and controlled by the Alaska Steamship Co., owner of vessel.
- MAVERICK.**—Strike out system. Note, Standard Oil Co. of California, owner of vessel.
- MILLS.**—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG., hours, N; rate, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Ogden Mills, owner of vessel.
- MINNESOTAN.**—Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- MONTANAN.**—Range, 200; system, Telefunken, 1000; W. L., 300, 600; service PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- NACOOCHEE.**—System, Marconi, 400; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- NIAGARA (KYN).**—Range, 200; system, Marconi, 400; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Howard Gould, owner of vessel (yacht).
- NOKOMIS.**—System, Marconi. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Horace E. Dodge, owner of vessel (yacht).
- NOMA.**—Range, 200; system, Marconi, 480; W. L., 300, 600; service, PG; hours, X; rate, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Vincent Astor, owner of vessel (yacht).
- NORTH LAND (KJD).**—Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- NORTH STAR (KJS).**—System, Marconi, 400; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- NORTH STAR (WHR).**—Strike out all particulars.
- NORTHWESTERN (WAN).**—Range, 100; system, Kilbourne & Clark, 120; service, PG; hours, N. Note, Radio station operated and controlled by the Alaska Steamship Co., owner of vessel.
- NUSHAGAK.**—Range, 300; system, Kilbourne & Clark, 120; rate, 4 c. per word, 40 c. minimum per radiogram. Note, Radio station operated and controlled by the Alaska Packers' Association, owner of vessel.
- OHIOAN.**—Hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- OLD COLONY.**—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, N; rate, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Eastern Steamship Corporation, owner of vessel.
- OLIVER J. OLSON.**—Strike out all particulars.
- ONEONTA.**—Range, 100; system, Marconi, 1000; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- OREGONIAN.**—Range, 200; system, Telefunken, 1000; hours, X; rates North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- OSSABAW.**—Range, 250; system, Marconi, 240; W. L., 300, 600; service, PG; hours, X; rate, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Atlantic, Gulf & West Indies Steamship Lines (Mallory Steamship Co.) owner of vessel.

- OWERA.**—Range, 200; system, Marconi, 1000; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- PANAMAN.**—Range, 200; system, Telefunken, 1000; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- PANUO.**—Range, 200; system, Marconi, 240; service, PG; hours, X; rate, 4 c. per word, 40 c. minimum per radiogram.
- PATHFINDER.**—Range, 150; system, Telefunken; W. L., 300, 600; service, O; hours, N. Notes, Radio station operated and controlled by the United States Department of Commerce, Coast and Geodetic Survey. Surveying ship.
- PATTERSON (NLH).**—Range, 150; system, Telefunken; hours, N. Notes, Radio station operated and controlled by the United States Department of Commerce, Coast and Geodetic Survey. Surveying ship.
- PAVLOF.**—Range, 100; system, Marconi, 480; W. L., 300, 600; service, PG; hours, N; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- PENNSYLVANIAN.**—Range, 200; system, Telefunken, 1000; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- PETROLITE.**—Range, 200; system, Telefunken, 1000; service, PG; hours, 9m-12m, 2s-5s, 8s-10:30s; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Standard Oil Co. of New Jersey, owner of vessel.
- PILOT BOY.**—Strike out system. Note, Texas & Gulf Steamship Co., owner of vessel.
- PIONEER.**—Range, 200; system, Telefunken, 1000; service, PG; hours, 9m-12m, 2s-5s, 8s-10:30s; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Standard Oil Co. of New Jersey, owner of vessel.
- PLATURIA.**—Range, 200; system, Marconi, 240; service, PG; hours, N; rate, 4 c. per word, 40 c. minimum per radiogram.
- POLARINE.**—Range, 200; system, Telefunken, 1000; service, PG; hours, 9m-12m, 2s-5s, 8s-10:30s; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Standard Oil Co. of New Jersey, owner of vessel.
- PRINCETON (KST).**—Range, 200; system, Telefunken, 1000; service, PG; hours, 9m-12m, 2s-5s, 8s-10:30s; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, Standard Oil Co. of New Jersey, owner of vessel.
- REDONDO.**—Range, 100; system, Kilbourne & Clark, 120; hours, X. Note, Radio station operated and controlled by the Alaska Steamship Co., owner of vessel.
- RESCUE.**—Range, 100; system, De Forest, 240; W. L., 300, 600; service, PG; hours, X; rate, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Merritt & Chapman Derrick & Wrecking Co., owner of vessel.
- REUCE.**—Range, 100; system, Kilbourne & Clark, 120; W. L., 300, 600; service, PG; hours, X. Note, Radio station operated and controlled by the Columbia River Packers' Association, owner of vessel.
- SAMSON (WOS).**—Strike out all particulars.
- SAN FRANCISCO (KRT).**—Range, 200; system, Marconi, 480; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- SAN JUAN (KGJ).**—System, Marconi, 400.
- SAN MARCOS.**—Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- SANTA ANA.**—Range, 100; system, Kilbourne & Clark, 120; service, PG; hours, N. Note, Radio station operated and controlled by the Alaska Steamship Co., owner of vessel.
- SANTA CECILIA.**—Range, 100; system, Marconi, 480; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. per radiogram.

- SANTA MARTA.**—Range, 500; system, Composite, 1000; service, PG; hours, N; rate, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated controlled by the Tropical Radio Telegraph Co. Santa Marta Steamship Corporation, owner of vessel.
- SARAMACCA.**—Range, 350; system, Wireless Specialty Apparatus Co., 1000; service, PG; hours, N; rate, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Tropical Radio Telegraph Co. Saramacca Steamship Corporation, owner of vessel.
- SATSUMA.**—Range, 200; system, Marconi, 480; service, PG; hours, N; rate, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co., of America. Barber & Co., owner of vessel.
- SECURITY.**—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, X.
- SENATOR.**—Range, 100; system, Marconi, 480; W. L., 300, 600; hours, N; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- SENATOR BAILEY.**—W. L., 300, 450, 600; hours, X.
- SHENANGO (KTC).**—System, Marconi, 240; hours, X.
- SHENANGO (WET).**—Strike out all particulars.
- SIBERIA.**—System, Marconi, 300.
- SOMERSET (KSU).**—Range, 200; system, Telefunken, 1000; service, PG; hours, 9m-12m, 2s-5s; 8s-10.30s; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Standard Oil Co. of New Jersey, owner of vessel.
- SPOKANE.**—Range, 100; system, Marconi, 480; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- STARR.**—Range, 100; system, Kilbourne & Clark, 120; W. L., 300, 600; service, PG; hours, X.
- ST. FRANCIS.**—Range, 100; system, Kilbourne & Clark, 120; W. L., 300, 600; service, PG; hours, X; rate, 4 c. per word, 40 c. minimum per radiogram. Note, Alaska Fishermen's Packing Co., owner of vessel.
- ST. NICHOLAS.**—Range, 100; system, Kilbourne & Clark, 120; W. L., 300, 600; service, PG; hours, X. Note, Radio station operated and controlled by the Columbia River Packers' Association, owner of vessel.
- SULTANA.**—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Mrs. Mary W. Harriman, owner of vessel (yacht).
- SURINAME.**—Range, 350; system, Wireless Specialty Apparatus Co., 1000; service, PG; hours, N; rate, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Tropical Radio Telegraph Co. Suriname Steamship Corporation, owner of vessel.
- S. V. LUCKENBACH.**—Range, 200; system, Marconi, 400; service, PG; hours, N; rate, 4 c. per word, 40 c. minimum per radiogram.
- TATOOSH.**—Range, 100; system, Kilbourne & Clark, 120; W. L., 300, 600; service, PG; hours, X.
- TEXAN.**—Range, 250; system, Telefunken, 1000; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- TOPILA.**—System, Marconi, 480; hours, X.
- TYEE JUNIOR.**—Strike out all particulars.
- WAKIVA.**—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, N; rate, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Lamon V. Harkness, owner of vessel (yacht).
- WALLULA.**—Range, 100; system, Marconi, 1000; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- WAPAMA.**—Range, 100; system, Marconi, 240; W. L., 300, 600; service, PG; hours, N; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Chas. R. McCormick & Co., owner of vessel.

- W. B. FLINT.—Range, 100; system, Kilbourne & Clark, 120; W. L., 300, 600; service, PG; hours, X; rate, 4 c. per word, 40 c. minimum per radiogram. Note, Radio station operated and controlled by the Alaska Fishermen's Packing Co., owner of vessel.
- W. B. KEENE.—Range, 200; system, Marconi, 400; service, PG; hours, X.
- WICO.—Range, 200; system, Marconi, 480; service, PG; hours, X.
- WILLIAM P. SNYDER.—Strike out all particulars.
- WILLIAM P. SNYDER, JR.—Strike out all particulars.
- WILPEN.—Strike out all particulars.
- WINDBER.—Range, 100; system, Marconi, 480; W. L., 300, 600; service, PG; hours, N; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- ZAPORA.—Range, 100; system, Kilbourne & Clark, 120; W. L., 300, 600; service, PG; hours, X. Note, Radio station operated and controlled by the International Fisheries Co., owner of vessel.
- ZARA.—Range, 200; strike out system; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, F. J. Littlefield, owner of vessel (yacht).

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out particulars after the following call signals: KDV, KDW, KDX, KIJ, KIS, KJA, KMO, KPD, KUP, WAO, WBG, WBH, WBZ, WEQ, WER, WES, WET, WEU, WGD, WHD, WHR, WHW, WNB, WOS, WPB, WPW, WPZ, WWP.

MISCELLANEOUS.

RATES.

The Marconi Wireless Telegraph Co. of America has been authorized by the Department to apply a rate of \$1.25 for 10 words and 12 c. for each additional word, domestic count, for commercial business between its stations at Astoria, Oreg., and Ketchikan, Alaska. These stations will also apply a ship rate of 6 c. per word for North and South American service and 12 c. per word for transoceanic service, the foregoing rates to be effective June 1, 1915.

The Department has approved the reestablishment of the rate of 6 c. per word for limited public service between the Marconi station at Miami, Fla., and the British Government station at Nassau, Bahamas, effective June 1, 1915. The Department authorized an increase in this rate to 12 c. per word, effective March 15, 1915, and the 6 c. rate has been reestablished at the request of the Marconi Co.

COMMERCIAL EXTRA FIRST-GRADE OPERATORS.

The name of Fred Elmer Nickel, of San Francisco, Cal., has been added to the list of those to whom commercial extra first-grade licenses have been issued by the Secretary of Commerce as a reward for long and efficient service.

LIST OF RADIO STATIONS OF THE UNITED STATES.

The owners of all radio stations, other than general and restricted amateur, are requested to forward to the radio inspector of their districts any changes in their stations and information as to the dismantling of stations or the erection of new stations, in order that these changes may be included in the List of Radio Stations of the United States, edition of July 1, 1915, and the bureau's records brought up to date.

NOME, ALASKA, SUMMER SCHEDULE.

The following summer-operating schedule will be maintained by the Signal Corps radio station at Nome, Alaska (Nome time), during the months of July, August, and September:

DAILY.

NULATO.—9 a. m., 11 a. m., 3 p. m., 5 p. m., 7.45 p. m.
 ST. MICHAEL.—10 a. m., 2 p. m., 6 p. m., 7 p. m.
 ST. PAUL.—8.30 a. m., 4 p. m.

SUNDAYS AND HOLIDAYS.

NULATO.—9 a. m., 5 p. m.
 ST. MICHAEL.—10 a. m., 6 p. m.

DAILY.

Schedule after 8 p. m. fixed by Nulato to clear the line east. This sometimes takes to midnight and after.

The time not covered above will be available for ships night and day and for St. Paul, but it should be thoroughly understood that the stations mentioned will clear before surrendering.

AMENDMENTS.

[To be cut out and pasted in your copy.]

The Radio Communication Laws of the United States, edition of July 27, 1914, are hereby amended as follows:

Page 56, paragraph 71, should read:

In order to comply with section 2 of the act of July 24, 1910, every land station open to general public service, and every station on board an American vessel of the first or second class engaged in the foreign trade or transoceanic service, shall have as a part of the station equipment a copy of the official Berne list and supplements thereto as issued. Information concerning the use of this list and method of procuring it is given on page 72, paragraph 196.

Page 72, Paragraph 193, should read:

Supplements to this list are issued monthly under the title "Radio Service Bulletin," and the list is revised annually as of July 1. These monthly supplements contain information concerning Government, commercial, and special stations only, and information regarding amateur stations appears only in the annual edition of the list of Radio Stations of the United States. Amendments to or changes in the Radio Laws and Regulations of the United States are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication. Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

Page 72, paragraph 195, should read:

A copy of the official Berne list, and supplements as issued, are required as a part of the equipment of every land station open to general public service and every ship station of the first or second class on American vessels engaged in foreign trade or the transoceanic service.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, July, 1915—No. 7

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the list of Radio Stations of the United States, and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the list of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the list of Radio Stations of the United States and the list of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

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Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

ABBREVIATIONS.

INTERNATIONAL ABBREVIATIONS USED IN THIS LIST.

Nature of service:

PG=General public.

PR=Limited public.

P=Private.

O=Government business exclusively.

Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m.

s=p. m.

12 m=Midday.

12 s=Midnight.

c.=Cents.

OTHER ABBREVIATIONS.

Name =Name of station.

G. loc. =Geographical location (O=west longitude, N=north latitude).

Call =Radio call letters.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths.

Service=Nature of service.

Hours =Hours of operation:

Rates =Ship or coast charges in cents. (The rates in the international list are stated in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refers to notes in the Berne list.

Co. =Company.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Longitude and latitude (approximate).	Call signal.	Range.	System.	Wave lengths.
Darien, Panama ^{1,2}	O 79 46 40 N 9 07 20	NBA	1,000	U. S. Navy.....	.....
Iditarod, Alaska ^{3,4}.....	.....	KIV	200	Telefunken.....	500
Kvichak, Alaska (KMT) ^{5,6}	O 156 37 00 N 59 08 00	KMT	500	Composite, 500..	300, 600, 2,000
Teller, Alaska ⁷.....	.....	KWT	.....	.....	.....

¹ Radio station operated and controlled by the United States Naval Radio Service, Radio, Va.² Service, O; hours, N.³ Radio station operated and controlled by the Alaska Wireless Telegraph Co.⁴ The station is limited to correspondence with the United States Signal Corps station at Nulato, Alaska; hours, 9m-7s.⁵ Radio station operated and controlled by the North Alaska Salmon Co.⁶ The station is limited to correspondence with ship and shore stations of the North Alaska Salmon Co.; hours, X.⁷ Radio station operated and controlled by Max R. Hirschberg.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Name.	Call signal.	Wave lengths.	Owner of vessel.
Communipaw.....	KOE	300, 600	Standard Oil Co. of New Jersey.
Glenpool.....	KOH	300, 600	Do.
Oregon (WOU) ¹	WOU		Crowley Launch & Tugboat Co.
Richard.....	WLG	300, 600	Richard Hulett & Son.
S. M. Fischer ¹	WPH		Reid Wrecking Co.
Wahama.....	KZW.		W. W. Campbell (yacht).

¹ System, Marconi.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Station.	Call signal.	Station.
KIV	Iditarod, Alaska.....c	KZW	Wahama.....b
KMT	Kvichak, Alaska.....c	NBA	Darien, Panama.....c
KOE	Communipaw.....b	WLG	Richard.....b
KOH	Glenpool.....b	WOU	Oregon.....b
KWT	Teller, Alaska.....c	WPH	S. M. Fischer.....b

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS

[Additions to the list of Radio Stations of the United States, edition of July 1, 1914, only.]

Name.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Aldene, N. J.....	2XL	300, 600, 1800.....	P	X	Marconi Co.
Chicago, Ill.....	9YH	335, 600.....	P	X	Frank S. Jones.
Denver, Colo. (9ZA).....	9ZA	450, 500, 750.....	P	X	Co. A, Signal Corps, Colorado National Guard.
Lake Geneva, Wis. (9YW)....	9YW	300, 425.....	P	X	Northwestern Military and Naval Academy.
Lake Geneva, Wis. (9YX)....	9YX	300, 425.....	P	X	Do.
Madison, Wis.....	9XM	2000, 2200.....	P	X	University of Wisconsin.
New York, N. Y. (2XG).....	2XG	300, 350, 600, 850, 1800, 2500.	P	X	Radio Telephone & Telegraph Co.
New York, N. Y. (2YS).....	2YS	250, 300, 600.....	P	X	William S. Wilson.
Port Chester, N. Y.....	2ZP	200, 425, 600.....	P	X	John W. Hubbard.
San Francisco, Cal. (6XD)....	6XD	300, 600, 2500, 3000....	P	X	Dwyer Wireless Telephone & Telegraph Co.
Trinidad, Colo.....	9ZB	450, 600, 750.....	P	X	Co. A, Signal Corps, Colorado National Guard.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
2XG	Second district:	9XM	Ninth district:
2XL	New York, N. Y.	9YH	Madison, Wis.
2YS	Aldene, N. J.	9YX	Chicago, Ill.
2ZP	New York, N. Y.	9YX	Lake Geneva, Wis.
	Port Chester, N. Y.	9ZA	Do.
6XD	Sixth district:	9ZB	Denver, Colo.
	San Francisco, Cal.		Trinidad, Colo.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- ASTORIA, OREG.**—Range, 250–1500; system, Marconi, 480; W. L., 300, 600, 1800, 3100. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. The long wave lengths are used for limited public service with Ketchikan, Alaska; rates, for commercial business, \$1.25 for 10 words (10 word minimum) and 12 c. for each additional word, domestic count. For press dispatches, 3 c. per word.
- HEEIA POINT, HAWAII.**—Notes, Radio station operated and controlled by the Federal Telegraph Co. The station is reserved for correspondence with a land station at South San Francisco, Cal.; rates, regular messages, 25 c. per word, cable count, no minimum. Night lettergrams, plain English, cable count, code address allowed, 13 words minimum including prefix, \$1. Each additional word, 8 c. Week-end letters, plain English, cable count, code address allowed, 25 word minimum including prefix, \$1.50. Each additional word, 6 c.
- JUNEAU, ALASKA.**—Range, 250–1500; system, Marconi, 480; W. L., 300, 600, 1800, 3100; service, PG; hours, N; rates, North and South American service, 6 c. per word, 60 c. minimum per radiogram, transoceanic service, 12 c. per word, \$1.20 minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. The long wave lengths are used for limited public service with Ketchikan, Alaska; rates, 50 c. for 10 words (10 word minimum) and 5 c. for each additional word, domestic count.
- JUPITER, FLA.**—Strike out W. L., service, O.
- KETCHIKAN, ALASKA.**—Range, 250–1500; system, Marconi, 480; W. L., 300, 600, 1800, 3100; service, PG; hours, N; rates, North and South American service, 6 c. per word, 60 c. minimum per radiogram, transoceanic service, 12 c. per word, \$1.20 minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. The long wave lengths are used for limited public service with Astoria, Oreg.; rates, for commercial business, \$1.25 for 10 words (10 word minimum) and 12 c. for each additional word, domestic count. For press dispatches, 3 c. per word. The station also communicates with Juneau, Alaska, rates, 50 c. for 10 words (10 word minimum) and 5 c. for each additional word, domestic count.
- MIAMI, FLA.**—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. The station also exchanges correspondence with Nassau (Bahamas); rate, 6 c. per word, no minimum.
- SOUTH SAN FRANCISCO, CAL.**—Notes, Radio station operated and controlled by the Federal Telegraph Co. The station is reserved for correspondence with a land station at Heeia Point (near Honolulu), Hawaii; rates, regular messages, 25 c. per word, cable count, no minimum. Night lettergrams, plain English, cable count, code address allowed, 13 words minimum including prefix, \$1. Each additional word 8 c. Week-end letters, plain English, cable count, code address allowed, 25 word minimum including prefix, \$1.50. Each additional word 6 c.
- TAMPA, FLA.**—Hours, 7m–10s.
- UNALGA, ALASKA.**—Strike out all particulars.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the list of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- BUNKER HILL.**—Range, 200; system, Marconi, 400; W. L., 300, 600; service, PG; hours, N; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Eastern Steamship Corporation, owner of vessel.
- CADDO.**—Range, 200; system, Telefunken, 1000; service, PG; hours, 9m–4s, 8s–12s; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Standard Oil Co. of New Jersey, owner of vessel.

- CITY OF ATLANTA.**—System, Marconi, 400; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- CITY OF CHICAGO.**—Name, City of St. Joseph.
- COALINGA.**—Range, 400; system, Poulsen arc; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Federal Telegraph Co. Union Steamship Co. (Union Oil Co.), owner of vessel.
- DAKOTAN.**—Hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- DAMARA.**—Name, Florence Luckenbach.
- DOROTHY BRADFORD.**—Strike out range; strike out system. Note, Cape Cod Steamship Co., Trustees, owner of vessel.
- GRACE DOLLAR.**—System, Marconi. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Grace Dollar Steamship Co., owner of vessel.
- GREENWOOD.**—Strike out all particulars.
- INDEPENDENT.**—Strike out all particulars.
- KANSAS CITY.**—Strike out all particulars.
- LUCY NEFF.**—Strike out all particulars.
- LUNDIN POWER LIFEBOAT.**—Name, Lundin; system, Marconi, 240; W. L., 300, 600; service, PG; hours, X; rates, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Welin Marine Equipment Co., owner of vessel.
- LYMAN STEWART.**—Range, 400; system, Poulsen arc; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Federal Telegraph Co. Union Oil Co. of California, owner of vessel.
- MISSOURIAN.**—Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- MORENI.**—Range, 200; system, Telefunken, 1000; service, PG; hours, 9m—12m, 2s—5s, 8s—10:30s; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Standard Oil Co. of New Jersey, owner of vessel.
- NOKOMIS.**—Range, 100; system, Marconi, 240; W. L., 300, 600; service, PG; hours, X; rates, 2 c. per word, 20 c. minimum per radiogram.
- NORTH STAR (KYZ).**—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Cornelius Vanderbilt, owner of vessel (yacht).
- PRISCILLA.**—System, Fessenden, 260; W. L., 300, 556. 600.
- RESTORER.**—System, Composite, 480; W. L., 250, 300, 600.
- ROCHELLE.**—Strike out all particulars.
- SANTA CLARA (KIR).**—Strike out all particulars.
- SANTA RITA (WTG).**—System, Marconi; W. L., 300, 600. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Sun Co., owner of vessel.
- SAVAGE (KRS).**—Strike out all particulars.
- SEA OTTER.**—Strike out all particulars.
- SEMINOLE (KVJ).**—Strike out all particulars.
- SEWARD.**—Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.
- SIBERIA.**—Range, 150; system, Marconi, 250; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Siberia Steamship Corporation (Atlantic Fruit Co.) owner of vessel.
- SIXAOLA.**—Range, 500; system, Wireless Specialty Apparatus Co., 1000; service, PG; hours, N; rates, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Tropical Radio Telegraph Co. Sixaola Steamship Corporation, owner of vessel.

SULTANA.—Range, 200; system, Marconi, 240; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

WINONA.—Strike out all particulars.

WOODBURY.—Strike out all particulars.

ZEALANDIA (KNR).—Range, 200; system, Fessenden, 1000; W. L., 300, 600; service, PG; hours, X; rates, 4 c. per word, 40 c. minimum per radiogram. Notes, Radio station operated and controlled by the National Electric Signaling Co. Fiske Trading Co., owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

WDT, read: City of St. Joseph (b); WNM, read: Florence Luckenbach (b). Strike out particulars following the call signals KIR, KNQ, KRS, KVJ, KYS, NPV, NRJ, NRV, WNR, WPI, WQG, WWS.

MISCELLANEOUS.

PANAMA-PACIFIC INTERNATIONAL EXPOSITION.

The Bureau's radio exhibit at the Panama-Pacific International Exposition has been awarded a silver medal for the educational demonstration of methods and apparatus for the enforcement of the Federal radio laws. This exhibit consists of all the necessary instruments used by radio inspectors in the inspection of radio equipment—a model ship set and a model amateur set.

It has been reported to the Bureau that signals from the Eilvese station in Germany have been received at the Bureau's station, and time signals are received daily from the Mare Island Navy Yard station sufficiently audible to allow visitors to set their watches at a distance of 30 feet from the radio receiver, and considerable interest has been manifested in these two features of the exhibit.

A radio inspector is in charge of the exhibit at all times to demonstrate the method of inspection, to give information concerning the radio laws and regulations to owners and masters of vessels, operators and amateurs, and to distribute the Department's publications concerning the radio laws and regulations. The inspector in charge is prepared to conduct examinations of applicants for radio operator licenses.

COMMERCIAL OPERATOR FINED.

A commercial radio operator of New York City was reported by the radio inspector of that district for changing his second-grade commercial operator's license to resemble a first-grade license and obtaining employment as a first-grade operator. The case was reported to the United States district attorney for prosecution, and upon pleading guilty to a charge of forgery the operator was fined \$25 by Judge Grubb, of the United States district court.

GENERAL STATISTICS OF THE INTERNATIONAL BUREAU FOR 1913.

Copies of the General Statistics of Radiotelegraphy for the year 1913 may be procured from the International Bureau of the Telegraph Union, Radiotelegraphic Service, Berne, Switzerland, at 30 centimes (6 cents) per copy, postage extra.

RADIO SERVICE PERSONNEL.

Benjamin E. Wolf, radio inspector in charge of the Bureau's exhibit at the Panama-Pacific International Exposition, has been placed in charge of the Seattle office and Ellery W. Stone, assistant radio inspector at San Francisco, has been detailed to the exposition as the Bureau's representative. William F. Macomber has been appointed as an assistant radio inspector at San Francisco.

R. D. Duncan, jr., assistant radio inspector at New York, has been transferred to the Bureau of Standards.

UNITED STATES NAVAL RADIO SERVICE CHANGES.

The Jupiter (Fla.) station of the United States Naval Radio Service has been closed to commercial traffic. Government messages and position reports will be accepted through that station.

The Unalga (Alaska) station of the United States Naval Radio Service has been discontinued and service may be obtained through the Dutch Harbor station instead.

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AUG 26 1915

RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, August, 1915—No. 8

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
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E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

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Notes =Refers to notes in the Berne list.

Co. =Company.

NOTICE.

It will be noted that the additions, alterations, and corrections contained in this bulletin apply to the List of Radio Stations of the United States, edition of July 1, 1914.

The additions, alterations, and corrections which will appear in the October issue of this bulletin will be supplementary to the List of Radio Stations of the United States, edition of July 1, 1915, which is now in the hands of the printer, although it is not possible at this time to anticipate its delivery. All additions, alterations, and corrections appearing in the October and later editions of this bulletin should be saved and inserted in the new annual list as soon as it is received.

A sufficient number of blank pages will be inserted in the back of the new list in order that the additions appearing in the bulletins may be clipped and pasted therein, enabling operators and others concerned to keep their annual list up to date with very little trouble.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Longitude and latitude (approximate).	Call signal.	Range.	System.	Wave lengths.
Fort Adams, R. I. ^{1,2}		WUU	125	U. S. Army, 500.	1200
Jualin, Alaska ³		KJA		Marconi.	
Portland, Oreg. (KDP) ^{4,5}	O 122 42 30	KDP	150	Composite, 450..	300, 550, 600
	N 45 30 45				
Portland, Oreg. (KGN) ^{6,7}	O 122 41 00	KGN	150	Composite, 400..	300, 600, 1700
	N 45 32 00				
Rialto, Cal. ^{8,7}	O 117 26 53	KJR	250	Massie, 200.....	300, 600, 1610
	N 34 12 08				
Tolovana, Alaska ⁸	O 149 30 00	KIZ	300	Telefunken, 1000	300, 600
	N 65 00 00				

¹ Radio station operated and controlled by the United States Signal Corps, War Department, Washington, D. C.

² Service, O; hours, 6m. 10s.

³ Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.

⁴ Radio station operated and controlled by Charles L. Austin. The station is limited to correspondence on ships' business with vessels entering and leaving the port of Portland.

⁵ Hours, X.

⁶ Radio station operated and controlled by the Northwestern Electric Co.

⁷ Radio station operated and controlled by the Southern California Edison Co. The station is limited to correspondence with stations of the Southern California Edison Co.

⁸ Radio station operated and controlled by the Alaska Wireless Telegraph Co.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Service.	Hours.
Atlanta ¹	KGR	Marconi.	300, 600		
Cacique ²	WBE		300, 600		
Captain T. M. Morrison ^{3,4}	WYZ	U. S. Army, 500.	1200	O	X
General Geo. H. Weeks ^{3,4}	WZT	do.	1200	O	X
General G. W. Getty ^{3,4}	WYS	do.	1200	O	X
General J. M. Brannan ^{3,4}	WZV	do.	1200	O	X
General Nathaniel Greene ^{3,4}	WZR	do.	1200	O	X
General Richard Arnold ^{3,4}	WYY	do.	1200	O	X
General R. N. Batchelder ^{3,4}	WZW	do.	1200	O	X
General Timothy Pickering ^{3,4}	WZQ	do.	1200	O	X
Henry Wilson ^{3,4}	WZS	do.	1200	O	X
Major Albert G. Forse ^{3,4}	WYQ	do.	1200	O	X
Ossipee ^{4,5}	NRJ	U. S. C. G., 1000.	{ 300, 600, 750, 1000 }	PG	N
Roosevelt ^{6,7}	NLR	Composite, 400..	300, 600	O	X
Sprigg Carroll ^{3,4}	WZU	U. S. Army, 500.	1200	O	X
Tallapoosa ^{4,5}	NRV	U. S. C. G., 1000.	{ 300, 600, 750, 1000 }	PG	N

* Radio station operated and controlled by the United States Signal Corps, War Department, Washington, D. C. Army tug.

¹ Radio station operated and controlled by the Cuba Improvement & Steamship Co., owner of vessel.

² W. R. Grae & Co., owner of vessel.

³ Range, 30.

⁴ Radio station operated and controlled by the United States Coast Guard, Treasury Department, Washington, D. C.

⁵ Range, 300; rates, 4 cents per word, 40 cents minimum per radiogram.

⁶ Radio station operated and controlled by the United States Department of Commerce, Bureau of Fisheries, Washington, D. C.

⁷ Range, 300.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b—ship station; c—land station.]

Call signal.	Station.	Call signal.	Station.
KDP	Portland, Oreg.....c	WYQ	Major Albert G. Forse.....b
KGN	Portland, Oreg.....c	WYS	General G. W. Getty.....b
KGR	Atlanta.....b	WYY	General Richard Arnold.....b
KIZ	Tolovana, Alaska.....c	WYZ	Captain T. M. Morrison.....b
KJA	Jualin, Alaska.....c	WZQ	General Timothy Pickering.....b
KJR	Rialto, Cal.....c	WZR	General Nathanael Greene.....b
NLR	Roosevelt.....b	WZS	Henry Wilson.....b
NRJ	Ossipee.....b	WZT	General Geo. H. Weeks.....b
NRV	Tallapoosa.....b	WZU	Sprigg Carroll.....b
WBE	Cacique.....b	WZV	General J. M. Brannan.....b
WUU	Fort Adams, R. I.....c	WZW	General R. N. Batchelder.....b

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1914, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Athens, Ohio.....	8YP	300, 425.....	P	X	Ohio University.
Bremerton, Wash.....	7XL	300, 600, variable.....	P	X	T. M. Libby.
Rapid City, S. Dak.....	9XA	Variable.....	P	X	Claude C. Van Nuyes (South Dakota School of Mines).

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
7XL	Seventh district: Bremerton, Wash.	9XA	Ninth district: Rapid City, S. Dak.
8YP	Eighth district: Athens, Ohio.		

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

DENVER, COLO.—Hours, 9m–11.30m, 7.30s–11s.

GALVESTON, TEX.—W. L., 300, 500, 600; hours, 7m–12m, 1s–2m.

IDITAROD, ALASKA.—G. loc., (approximate) 0 158° 00' 00'', N 62° 40' 00''; hours, 9m–7s.

NEWTON, MASS.—System, Clapp-Eastham, 2500. Notes, Radio station operated and controlled by Ralph C. Emery. The station is limited to private correspondence with vessels for which John S. Emery & Co. (Inc.), are agents.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ALABAMA (WFB).—Hours, X.

ALBERTA.—Range, 200; system, Marconi, 1000; W. L., 300, 600; 1800; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Fred Gilbert Bourne, owner of vessel (yacht).

ATLANTIC.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. New York Intercoastal & Coastwise Steamship Co., owner of vessel.

ATLANTIC CITY.—Strike out all particulars.

CAROLINA (WFE).—Hours, X.

CITY OF ALPENA II.—Strike out system. Note, Detroit & Cleveland Navigation Co., owner of vessel.

CITY OF BENTON HARBOR.—Hours, X.

CITY OF DETROIT II.—Strike out system. Note, Detroit & Cleveland Navigation Co., owner of vessel.

CITY OF MACKINAC II.—Strike out system. Note, Detroit & Cleveland Navigation Co., owner of vessel.

CITY OF ST. IGNACE.—Strike out system. Note, Detroit & Cleveland Navigation Co., owner of vessel.

CITY OF ST. JOSEPH.—System, Marconi, 240; hours, X.

CITY OF SYDNEY.—Strike out system. Note, Pacific Mail Steamship Co., owner of vessel.

COMMONWEALTH (KXC).—System, Fessenden, 260; W. L., 300, 550, 600.

EDGAR H. VANCE.—Strike out system. Note, Hammond Lumber Co., owner of vessel.

EVANGELINE.—System, Marconi, 1000. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Evangeline Co. (Plant Line Steamship Co.), owner of vessel.

FINLAND.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. International Mercantile Marine Co. (Panama Pacific Line), owner of vessel.

FORWARD (KPF).—Rates, 4c. per word, 40c. minimum per radiogram.

GULFCOAST.—Range 200; system, Marconi, 240; service, PG; hours, X; rate, 4c. per word, 40c. minimum per radiogram.

HOWARD.—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4c. per word, 40c. minimum per radiogram; transoceanic service, 8c. per word, 80c. minimum per radiogram.

HOWICK HALL.—Hours, X.

IAQUA.—Strike out system. Note, John A. McGregor, owner of vessel.

INDIANA (WFC).—Hours, X.

J. B. STETSON.—Strike out system. Note, Hicks-Hauptman Navigation Co., owner of vessel.

KROONLAND.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. International Mercantile Marine Co. (Panama-Pacific Line), owner of vessel.

LEELANAW.—Strike out all particulars.

LUNDIN.—Strike out all particulars.

LYSISTRATA.—System, Marconi; W. L., 300, 600; service, PG. Note, Radio station operated and controlled by James Gordon Bennett, owner of vessel (yacht).

OCEANA.—Strike out system. Note, Bermuda-American Steamship Corporation, owner of vessel.

OREGON (WOU).—Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Crowley Launch & Tugboat Co., owner of vessel.

PACIFIC.—Range, 250; system, Wireless Specialty Apparatus Co., 1000; service, PG; hours, X; rate, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Emery Steamship Co., owner of vessel.

PILGRIM.—Strike out all particulars.

P. R. R. BARGE 707.—Strike out all particulars.

PURITAN (KXX).—Strike out all particulars.

PURITAN (WDU).—Hours, X.

RAMOS.—Rates, 4 c. per word, 40 c. minimum per radiogram. Note, Sloan, Danenhower & Co., owner of vessel.

RIVERSIDE.—Strike out all particulars.

SAN MARCOS.—System, Marconi, 400; hours, X.

SANTA RITA (WTG).—Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

SANTA ROSA.—Strike out all particulars.

S. M. FISCHER.—Range, 200; system, Marconi, 450; W. L., 300, 600; service, PG; hours, X; rate, 2 c. per word, 20 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Reid Wrecking Co., owner of vessel.

SONOMA (WHM).—System, Poulsen arc. Note, Oceanic Steamship Co., owner of vessel.

WESTERN STATES.—Strike out system. Note, Detroit & Cleveland Navigation Co., owner of vessel.

WINCHESTER.—Strike out all particulars.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all particulars following the call signals KMN, KPR, K VX, KXG, KKK, KZK, WGN, WNI, and WRM.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1914, only.]

AMESBURY, MASS.—Strike out all particulars.

ANN ARBOR, MICH.—W. L., 450, 600, 1800.

DETROIT, MICH.—Strike out all particulars.

GLOUCESTER, MASS.—W. L., 300, 600, variable; service, P; hours, X.

NEW YORK, N. Y. (2XH).—W. L., 300, 540, 600, 800.

MISCELLANEOUS.

COMMERCIAL TRAFFIC REGULATIONS OF NAVAL RADIO SERVICE.

The superintendent of the United States Naval Radio Service, Radio, Va., announces the completion of the Commercial Traffic Regulations of that service. These books may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 25 cents per copy.

LONDON RADIOTELEGRAPH CONVENTION.

The Department has been advised by the State Department that since January 1, 1915, New Caledonia and Tonga have acceded to the International Radiotelegraph Convention, signed at London on July 5, 1912.

RADIO SERVICE PERSONNEL.

Charles Blankenship, of Everett, Mass., formerly radio electrician on the coast-guard cutter *Gresham*, has been appointed as an assistant radio inspector in the service of the Bureau of Navigation at Chicago, Ill.

AWARD OF MEDALS TO BUREAU OF NAVIGATION AND PERSONNEL.

The superior jury of the Panama-Pacific International Exposition has awarded the following medals to the Bureau of Navigation: Radio apparatus, medal of honor; educational demonstration of methods and apparatus for enforcement of the Federal radio law, silver medal.

Silver medals for collaboration with the Department of Commerce in its exhibit at the exposition have been awarded by the superior jury to V. Ford Greaves, radio engineer, and Benjamin E. Wolf, radio inspector.

COMMERCIAL OPERATOR REPRIMANDED.

■ The attention of all operators is again invited to the Laws and Regulations of the Department, page 74, paragraph 210, regarding the use of profane or obscene language in radio communication.

The superintendent of the Naval Radio Service recently reported a commercial operator in the sixth district for a violation of this regulation, and the radio inspector at San Francisco recommended that his license privilege be suspended. The operator has been severely reprimanded by the Secretary of Commerce for his misconduct, no further action being taken on account of the recommendation of the operator's employer, attesting to his previous good record.

Any future violations of this regulation may be subject to more drastic action on the part of the Department.

ADDITIONAL COPIES

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, September, 1915—No. 9

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the list of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the list of Radio Stations of the United States.

The Bulletin contains tables of new stations, alterations, and corrections under headings, so that the list of Radio Stations of the United States and the list of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of The Bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in The Bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

ABBREVIATIONS.**INTERNATIONAL ABBREVIATIONS USED IN THIS LIST.****Nature of service:**

- PG=General public.
 PR=Limited public.
 P=Private.
 O=Government business exclusively.

Hours of operation:

- N=Continuous service.
 X=No regular hours.
 m=a. m.
 s=p. m.
 12 m=Midday.
 12 s=Midnight.
 c.=Cents.

OTHER ABBREVIATIONS.

- Name =Name of station.
 G. loc. =Geographical location (O=west longitude, N=north latitude).
 Call =Radio call letters.
 System=Radio system used and sparks per second.
 Range =Normal range in nautical miles.
 W. L. =Wave lengths.
 Service=Nature of service.
 Hours =Hours of operation.
 Rates =Ship or coast charges in cents. (The rates in the international list are stated in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)
 Notes =Refers to notes in the Berne list.
 Co. =Company.

NOTICE.

It will be noted that the additions, alterations, and corrections contained in this Bulletin apply to the List of Radio Stations of the United States, edition of July 1, 1914.

The additions, alterations, and corrections which will appear in the October issue of this bulletin will be supplementary to the List of Radio Stations of the United States, edition of July 1, 1915, which is now in the hands of the printer, although it is not possible at this time to anticipate its delivery. All editions, alterations, and corrections appearing in the October and later editions of this Bulletin should be saved and inserted in the new annual list as soon as it is received.

A sufficient number of blank pages will be inserted in the back of the new list in order that the additions appearing in the Bulletins may be clipped and pasted therein, enabling operators and others concerned to keep their annual list up to date with very little trouble.

NEW STATIONS.**SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.**

[Additions to the List of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Name.	Call signal.	Wave lengths.	Owner of vessel.
Chalmette.....	KKC	300, 600...	Southern Pacific Co.
Mukilteo.....	WRL	300, 600...	Charles Nelson Co.
Remlik ¹	KZR	300, 600...	Willis S. Kilmer.
Roamer.....	KZN	.....	State of Florida.

¹ Range, 200; system, Marconi, 240; service, PG; hours, X; rates, North and South American service, 4c. per word, 40c. minimum per radiogram; transoceanic service, 8c. per word, 80c. minimum per radiogram. Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.

SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Call signal.	Station.	Call signal.	Station.
KKC KZN	Chalmette. Roamer.	KZR WRL	Remlik. Mukilteo.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1914, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Cincinnati, Ohio.....	8ZH	200, 500.....	P	X	Clayton M. Howes (Hughes High School).
Lima, Ohio.....	8YL	200, 425.....	P	X	J. E. Collins (Board of Education).
Mobile, Ala.....	5ZM	200, 300, 450.	P	X	Ben W. Martin.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

CHICAGO, ILL.—W. L., 300, 500, 600; service, PG and PR. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. The station is open only during the season of navigation.
DETROIT, MICH. (WDR).—Name, River Rouge, Mich.; system, Marconi, 480; W. L., 300, 500, 600; service, PG and PR.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1914, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ADDISON E. BULLARD.—Strike out all particulars.
ADMIRAL SCHLEY.—Rates, 4c. per word; 40c. minimum per radiogram.
ADMIRAL WATSON.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Pacific-Alaska Navigation Co., owner of vessel.
ALLIANCE.—Range, 100; system, Marconi, 120; W. L., 300, 600; service, PG; hours, N. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. North Pacific S. S. Co., owner of vessel.
AMERICA.—Strike out all particulars.
ANTILLA.—Hours, N.
ASTRAL.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Transportation Co., owner of vessel.
BRILLIANT.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Transportation Co., owner of vessel.
CALIFORNIA (KYQ).—Strike out system. Note, Mrs. Clara B. Stocker, owner of vessel (yacht).
CARLOS.—Strike out system. Note, Olson & Mahony Steamship Co., owner of vessel.
CAROLYN.—Strike out all particulars.
COMET (KTJ).—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Transportation Co., owner of vessel.
DOROTHY BRADFORD.—Range, 100; system, Wireless Specialty Apparatus Co., 1,000; strike out rates. Notes, Radio station operated and controlled by the Cape Cod Steamship Co., trustees, owner of vessel. Apparatus for emergency use only; not open to public service.

- EDGAR H. VANCE.—Strike out all particulars.
 FORWARD (KPF).—Strike out all particulars.
 GLENPOOL.—Range, 200; system, Telefunken, 1,000; service, PG; hours, 9m-12m, 2s-5s, 8s-10.30s; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Standard Oil Co. of New Jersey, owner of vessel.
 I. J. MERRITT.—Strike out all particulars.
 KINGFISHER.—Strike out all particulars.
 LAKEPORT.—Strike out all particulars.
 LAKEWOOD.—Strike out all particulars.
 MINNESOTA (WMI).—System, Marconi, 480; W. L., 300, 600; service, PG; rates, 8 c. per word, 80 c. minimum per radiogram.
 MONTAUK.—Strike out all particulars.
 MOTANO.—Range, 200; system, Telefunken, 1,000; service, PG; hours, 9m-12m, 2s-5s, 8s-10.30s; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Standard Oil Co. of New Jersey, owner of vessel.
 OSSABAW.—Strike out all particulars.
 PERFECTION.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Transportation Co., owner of vessel.
 RADIANT.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Transportation Co., owner of vessel.
 RAYO.—Notes, Radio station operated and controlled by the Atlantic Communication Co. Standard Transportation Co., owner of vessel.
 SATILLA.—Strike out all particulars.
 SECURITY.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Transportation Co., owner of vessel.
 SHINNECOCK.—Strike out all particulars.
 S. O. Co. No. 92.—Name, S. T. Co. No. 92. Note, Standard Transportation Co., owner of vessel.
 S. O. Co. No. 94.—Name, S. T. Co. No. 94. Note, Standard Transportation Co., owner of vessel.
 STANDARD.—Note, Standard Transportation Co., owner of vessel.
 THEODORE ROOSEVELT.—Strike out all particulars.
 ULYSSES.—System, Marconi; W. L., 300, 600. Note, Panama Canal, owner of vessel.
 VESTA (KTS).—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Standard Transportation Co., owner of vessel.
 WAHAMA.—Strike out all particulars.
 WM. E. CHAPMAN.—Strike out all particulars.
 WYANDOTTE.—Strike out all particulars.

SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KTP, read: S. T. Co. No. 94. KTY, read: S. T. Co. No. 92. Strike out particulars after the following call signals: KEN, KEO, KNF, KNS, KNT, KNW, KNZ, KPF, KRM, KRQ, KWL, KZW, WCT, WDJ, WDK, WPK, WQE.

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Stack

RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, October, 1915—No. 10

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

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Items of general interest concerning the enforcement of the radio laws are printed in The Bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSEL.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Name.	Call signal.	System.	Wave lengths.	Service.	Hours.
Alicia ¹	KZB	De Forest, 800.....	300, 600	PG	X
Azaiea ²	NLO				
Ellington ²	NLN				
Fort Bragg ³	WLH		300, 600		
Mount Hope ⁴	KOL	Composite, 200.....	300, 600	P	X
Silver Shell ⁵	WIA	Marconi.	300, 600		

¹ Range, 45; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by Alfred I. du Pont, owner of vessel (yacht).

² U. S. Department of Labor (Immigration Service), owner of vessel.

³ Higgins Lumber Co., owner of vessel.

⁴ Radio station operated and controlled by the Providence, Fall River & Newport Steamboat Co., owner of vessel.

⁵ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Silver Shell Steamship Co., owner of vessel.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[ADDITIONS TO THE LIST OF RADIO STATIONS OF THE UNITED STATES, EDITION OF JULY 1, 1915, ONLY.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Auburn, Ala.	5YA	1625, 1800	P	X	Alabama Polytechnic Institute.
Davenport, Iowa.....	9XE	300	P	X	William H. Kirwan.
Denver, Colo.	9ZD	200, 425	P	X	Edward C. Stockman.
Louisville, Ill.	9ZL	200, 425	P	(1)	Cecil Bridges.
New Orleans, La.	5XM	300, 600	P	X	Marconi Co.
New York, N. Y.	2YM	233, 300, 600	P	X	Y. M. C. A. Telegraph School.
Ridgway, Pa.	SXO	300, 425	P	X	W. P. Osterhout (Pittsburgh Wireless Equipment Co.).
Rockford, Ill.	9YB	200	P	X	Rockford School of Engineering.
Tiffin, Ohio.	8ZT	200, 425	P	(2)	John J. Grossman.
Washington, D. C.	3YM	200, 300, 400	P	X	McKinley Manual Training School.
Do.	3YN	200, 400, 1800	P	X	James E. Smith (National Radio School).

¹ 11.55 a. m. to 1 p. m.; 6.30 p. m. to 11 p. m.

² 7 p. m. to 10.30 p. m.

SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Call signal.	Station.	Call signal.	Station.
KOL	Mount Hope.	NLO	Azaiea.
KZB	Alicia.	WIA	Silver Shell.
NLN	Ellington.	WLH	Fort Bragg.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
2YM	Second district: New York, N. Y.	8XO	Eighth district: Ridgway, Pa.
3YM	Third district: Washington, D. C.	8ZT	Tiffin, Ohio.
3YN	Do.	9XE	Ninth district: Davenport, Iowa.
5XM	Fifth district: New Orleans, La.	9YB	Rockford, Ill.
5YA	Auburn, Ala.	9ZD	Denver, Colo.
		9ZL	Louisville, Ill.

ABBREVIATIONS.

INTERNATIONAL ABBREVIATIONS USED IN THIS LIST.

Nature of service:

PG=General public.

PR=Limited public.

P=Private.

O=Government business exclusively.

Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m.

s=p. m.

12 m=Midday.

12 s=Midnight.

c.=Cents.

OTHER ABBREVIATIONS.

Name =Name of station.

G. loc. =Geographical location (O=west longitude, N=north latitude).

Call =Radio call letters.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths.

Service=Nature of service.

Hours =Hours of operation.

Rates =Ship or coast charges in cents. (The rates in the international list are stated in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refers to notes in the Berne list.

NOTICE.

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ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ASHTABULA, OHIO.—System, Marconi, 480; W. L., 300, 500, 600; hours, 7.30m–11.30m, 12.30s–5s.

BALTIMORE, MD.—System, Marconi-United, 400.

BUFFALO, N. Y.—System, Marconi, 480; W. L., 300, 500, 600; hours, Sept. 16 to Dec. 15 and Apr. 15 to June 2, 7s–12s, 1m–7m; June 3 to Sept. 15, 7m–12m, 1s–6s, 7s–12s, 1m–6m.

- CALUMET, MICH.—System, Marconi, 480; W. L., 300, 500, 600. Note, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.
- CLEVELAND, OHIO.—System, Marconi, 480; W. L., 300, 500, 600.
- DULUTH, MINN.—System, Marconi, 480; W. L., 300, 500, 600. Note, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.
- FORT WORDEN, WASH.—Service, PG.
- FRANKFORT, MICH.—System, Marconi, 480; W. L., 300, 500, 600.
- GRAND HAVEN, MICH.—System, Marconi, 480; W. L., 300, 500, 600.
- LUDINGTON, MICH.—System, Marconi, 480; W. L., 300, 500, 600.
- MACKINAC ISLAND, MICH.—G. loc., O 84° 37' 00'', N 45° 50' 00''; system, Marconi, 480; W. L., 300, 500, 600; hours, Sept. 16 to Oct. 1 and June 7 to June 30, sunset to sunrise; July 1 to Sept. 15, 1m-6m, 7m-12m, 1s-6s, 7s-12s.
- MANISTIQUE, MICH.—System, Marconi, 480; W. L., 300, 500, 600.
- MANITOWOC, WIS.—System, Marconi, 480; W. L., 300, 500, 600. Note, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America.
- MARSHFIELD, OREG.—System, Marconi, 300; hours, first 15 minutes of each hour from 8m-6s.
- MILWAUKEE, WIS.—G. loc., O 87° 55' 25''-N 43° 02' 50''; system, Marconi, 480; W. L., 300, 500, 600.
- NEW ORLEANS, LA. (WHK).—Hours, 7.05m-8m, 10m-10.25m, 10.45m-10.55m, 1s-1.20s, 3s-4s, 5s-5.30s, 6s-6.30s, 8s-8.55s, 10s-11s.
- NOME, ALASKA.—Hours, N.
- SAGAPONACK, N. Y.—Hours, N.
- SEATTLE, WASH.—Service, PG and PR; hours, 8m-12m, 1s-5s, except Sundays and holidays; rates, PG service, 3 c. per word 30 c. minimum per radiogram. Notes, Radio station operated and controlled by the city of Seattle (harbor department). The station corresponds with the harbor patrol boat and all vessels entering Puget Sound. No charge for messages relating to shipping.
- TOLOVANA, ALASKA.—Name, Brooks, Alaska.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- ADMIRAL DEWEY.—Rates, 4 c. per word 40 c. minimum per radiogram.
- ADMIRAL FARRAGUT.—Rate, 4 c. per word 40 c. minimum per radiogram.
- ARIZONA.—System, Marconi, 240.
- BERKSHIRE.—Strike out all particulars.
- BRUNSWICK.—Range, 150.
- CAROLINA.—Range, 100; system, Marconi, 240.
- CASSANDRA.—Name, Casiana. Note, Edward L. Doheny, owner of vessel (yacht).
- CELILLO.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Celillo Steamship Co., owner of vessel.
- CHALMETTE.—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; service, PG; hours, N; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Southern Pacific Co., owner of vessel.
- CITY OF DETROIT III.—System, Marconi, 240.
- CITY OF MONTGOMERY.—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- CITY OF SAVANNAH.—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- CITY OF SEATTLE.—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Pacific Coast Steamship Co., owner of vessel.

- COAMO.**—System, Marconi, 1000; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- COLUMBIA (KRO).**—Strike out all particulars.
- COLUMBIA (WHC).**—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Henry Wilson, owner of vessel.
- COMUS (KKD).**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- CORDOVA.**—Range, 100; system, Kilbourne & Clark, 120; service, PG; hours, N; rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by the Alaska Steamship Co., owner of vessel.
- CRETAN.**—Range, 150; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- DESPATCH.**—Hours, N.
- DORA.**—Range, 100; system, Kilbourne & Clark, 120; service, PG; hours, X; rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by the Alaska Steamship Co., owner of vessel.
- EDITH.**—Strike out all particulars.
- EDWARD L. DOHENY.**—System, Marconi, 1000; W. L., 300, 475, 600; rates, North and South American service 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- ESPERANZA.**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- GEORGIA (WFA).**—System, Marconi, 240.
- GRECIAN.**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- GUARDIAN.**—Hours, X.
- HAVANA.**—Range, 300; system, Marconi, 1000; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service 8 c. per word 80 c. minimum per radiogram.
- HONOLULAN.**—Hours, X.
- INDIAN (KQI).**—Strike out all particulars.
- INDIANA (WFC).**—Range, 100; system, Marconi, 240.
- JAMESTOWN.**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- JOHN A. HOOPER.**—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. John A. Hooper Co., owner of vessel.
- KERSHAW.**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- LEXINGTON (KQL).**—Strike out all particulars.
- LYDONIA.**—System, Marconi, 240.
- MAROWIJNE.**—Strike out all particulars.
- MASCOTTE.**—System, Marconi, 200; W. L., 300, 600. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Peninsular & Occidental Steamship Co., owner of vessel.
- MEXICO.**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- MIAMI (KOZ).**—System, Marconi, 240; W. L., 300, 600. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America, Peninsular & Occidental Steamship Co., owner of vessel.
- MISSOURI (WFX).**—System, Marconi, 240. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Northern Michigan Transportation Co., owner of vessel.
- NORTH STAR (KYZ).**—Strike out all particulars.
- OLEUM.**—Note, Union Oil Co., owner of vessel.
- PARTHIAN.**—Strike out all particulars.
- PURITAN.**—Range, 100; system, Marconi, 240.
- QUANTICO.**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

- RELIEF.**—Range, 75; system, De Forest, 120; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Merritt & Chapman Derrick & Wrecking Co., owner of vessel.
- ROAMER.**—Range, 100; system, Marconi, 1000; W. L., 300, 450, 600; service, PG; hours, X; rate, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by the State of Florida (shellfish commission), owner of vessel.
- SAN JACINTO.**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- SANTA MARIA (WTF).**—Note, Santa Maria Steamship Co., owner of vessel.
- SANTA RITA (WTG).**—Range, 100; system, Marconi, 400; service, PG; hours, X.
- SARATOGA (KWS).**—Range, 300; system, Marconi, 1000; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- SAYONARA.**—Range, 200; system, Marconi, 600; W. L., 300, 600.
- SEEAANDBEE.**—System, Marconi, 240; hours, X.
- SOUTH AMERICAN.**—Strike out system. Note, The Texas Co., owner of vessel.
- STANDARD.**—Note, Standard Oil Co. of New Jersey, owner of vessel.
- TIONESTA.**—System, Marconi, 240.
- TUSCAN.**—Strike out all particulars.
- UMATILLA.**—System, Marconi, 480. Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Pacific Coast Steamship Co., owner of vessel.
- VIGILANCIA.**—Notes, Radio station operated and controlled by the Marconi Wireless Telegraph Co. of America. Walker, Armstrong & Co., owner of vessel.
- WHITTIER.**—Note, Union Transportation Co., owner of vessel.
- YUCATAN.**—Range, 100; system, Marconi, 480.
- ZULIA.**—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KIZ, *read* Brooks, Alaska c; **KYE**, *read* Casiana b; strike out particulars following the call signals **KDR**, **KQB**, **KQI**, **KQL**, **KQP**, **KQT**, **KRO**, and **WAE**.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

BOSTON, MASS. (1XH).—Strike out all particulars.

WATCHAUG POND, R. I.—W. L., 200, 300, 425, 600; service, P; hours, X.

MISCELLANEOUS.

SIGNAL CORPS RADIO STATION CHANGES.

The Signal Corps station at Nome, Alaska, now maintains continuous service and the station at Fort Worden, Wash., is now open to general public service. The Signal Corps station at Fort St. Michael, Alaska, has been discontinued as an examination point where operators may secure licenses.

COMMERCIAL EXTRA FIRST-GRADE OPERATORS.

The names of the following operators have been added to the list of those to whom commercial extra first-grade licenses have been

issued by the Secretary of Commerce as a reward for long and efficient service: John W. Lee, Philadelphia, Pa., and Robert Boyd Black, San Francisco, Cal.

THE PROVED VALUE OF RADIO TO VESSELS IN DISTRESS.

During the fiscal year 1915 the radio inspectors of the Bureau reported 26 cases of vessels leaving our ports which met with accident or disaster, requiring the use of wireless to summon assistance. Four of these were from fire; 12 were from running ashore, stranding, or getting into an ice jam; 3 were from the breakage of machinery; 4 resulted from collisions; 1 from shifting of cargo; 1 vessel was storm-battered and water-logged; and 1 was torpedoed. Excepting in the case of the *Lusitania*, which was torpedoed, the assistance thus rendered resulted in but two lives being lost. Since the close of the fiscal year the following disasters have occurred:

On September 13, 1915, the Fabre Line steamship *Sant' Anna*, bound from New York to Naples with 1,700 Italian reservists and crew aboard, caught fire in mid-ocean and all persons on board were saved. The SOS call brought the steamship *Ancona* to the assistance of the disabled vessel and 600 persons were taken off. The *Sant' Anna* then proceeded to port, convoyed by the *Ancona*, and the entire 1,700 passengers and crew saved.

Six days after the *Sant' Anna* disaster, the Greek liner *Athinai*, bound from New York to Piraeus, caught fire in mid-ocean and was abandoned by the passengers and crew, numbering 470. The call for assistance was answered by the steamships *Tuscania* and *Roumanian Prince*; 341 persons were taken on board the *Tuscania*, the remaining 129 being taken off by the *Roumanian Prince*. The vessel was entirely destroyed.

The use of radio apparatus on vessels carrying passengers, or with 50 or more crew, is now accepted as essential to the safety of those on board, and the report of the *Athinai* shows conclusively that many persons might have been lost and perhaps the cause of the disaster never known had not this vessel been equipped with radio apparatus.

ADDITIONAL COPIES

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Washington, November, 1915—No. 11

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Longitude and latitude (approximate).	Call signal.	Range.	System.	Wave lengths.
Great Lakes, Ill.*, ¹ , ²	O 87° 50' 00" N 42° 18' 30"	NAJ	800	U. S. Navy..	300, 600, 1000
Heald Bank Lightship * ³ , ⁴	O 94° 13' 00" N 29° 06' 00"	NLP	60	....do.....	300, 600
Indianhead, Md.*, ⁵	O 77° 10' 55" N 38° 38' 00"	NBG	.....	....do.....	300, 600, 750
Steamship Premier ⁶ , ⁷	O 158° 28' 00" N 58° 45' 00"	KMP	20	.....	300, 450, 600

* Radio station operated and controlled by the United States Naval Radio Service, Radio, Va.

¹ Great Lakes training station.

² Service, O; hours, N.

³ Off Galveston, Tex.

⁴ Service, O; hours, 8m 10s.

⁵ Service, O; hours, every hour on half hour from 8.30m. to 4.30s.

⁶ Moored schooner.

⁷ Hours, X; radio station operated and controlled by the Alaska Packers' Association. The station is limited to correspondence with Nushagak and Clark's Point, Alaska.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Service.	Hours.
General John M. Schofield ¹	WXW	U. S. Army.....	600	O	
Gold Shell ²	WIB	Marconi.....	300, 600	.....
Pioneer (WPM) ³	WPM	Kilbourne & Clark, 120.....	300, 600	PG	X
Tyee ⁴	WPC	Kilbourne & Clark, 120.....	300, 600	PG	X

¹ Radio station operated and controlled by the United States Signal Corps, War Department, Washington, D. C.

² Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Gold Shell Steamship Co., owner of vessel.

³ Range, 100; rates, 4 c. per word, 40 c. minimum per radiogram. Radio station operated and controlled by the Puget Sound Tugboat Co., owner of vessel.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Battle Creek, Mich.....	8ZC	200, 425	P	X	Bert E. Clough.
Schenectady, N. Y. (2YU).....	2YU	300, 2000	P	X	Walter L. Upson (Union College).

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
KMP	Premier.....c	WIB	Gold Shell.....b
NAJ	Great Lakes, Ill.....c	WPC	Tyee.....b
NBG	Indianhead, Md.....c	WPM	Pioneer.....b
NLP	Heald Bank Lightship.....c	WXW	General John M. Schofield.....b

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

- Name =Name of station.
 G. loc. =Geographical location: O=west longitude, N=north latitude.
 Call =Call letters assigned.
 System =Radio system used and sparks per second.
 Range =Normal range in nautical miles.
 W. L. =Wave lengths assigned: Normal wave length in italics.
 Service =Nature of service maintained:
 PG=General public.
 PR=Limited public.
 P=Private.
 O=Government business exclusively.
 Hours =Hours of operation:
 N=Continuous service.
 X=No regular hours.
 m=a. m. (12m=midday).
 s=p. m. (12s=midnight).
 Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent).
 Notes =Refer to notes in the Berne list.

OTHER ABBREVIATIONS.

Marconi Co.=Marconi Wireless Telegraph Co. of America.

ALTERATIONS AND CORRECTIONS.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the List of Radiotelegraph Stations, published by the Berne bureau.]

- ADMIRAL EVANS.—Range, 100; system, Kilbourne & Clark, 120; hours, N; strike out rates. Note, Radio station operated and controlled by the Pacific-Alaska Navigation Co., owner of vessel.
 ANTILLES.—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
 BATON ROUGE.—System, Marconi, 1000.
 BRINDILLA.—System, Marconi. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
 CADDO.—System, Marconi, 1000. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
 CAMAGUEY.—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
 CAROLINA (KGB).—Range, 300; system, Marconi, 1000; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
 CITY OF BUFFALO.—Hours, X.
 CITY OF MACON.—Range, 300; system, Marconi, 1000.
 CITY OF ST. LOUIS.—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
 COMMUNIPAW.—System, Marconi.
 COPPENAME.—Range, 500.
 CROFTON HALL.—System, Marconi, 1000; W. L., 300, 450, 600; hours, N.
 CUSHING (KSC).—System, Marconi. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.

- CYPRUS.—Service, P; strike out rates. Note, Radio station operated and controlled by Daniel C. Jackling, owner of vessel (yacht).
- DAYTON.—System, Marconi. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
- DIAMOND HEAD.—Strike out all particulars.
- ESSEX (KQE).—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- EXCELSIOR (KKO).—Range, 300; system, Marconi, 1000; W. L., 300, 465, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- FAVORITE.—System, Marconi, 240.
- GLENPOOL.—System, Marconi, 1000. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
- HERBERT G. WYLIE.—Range, 200; system, Marconi, 1000; service, PG; hours, X.
- HEREDIA.—System, National Electric Signaling Co., 1000.
- JUNIATA (KQJ).—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- KOREA.—Notes, Radio station operated and controlled by the Marconi Co. Atlantic Transport Co., owner of vessel.
- LAMPASAS.—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- LOUISIANA (KUL).—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- MARACAIBO.—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- MERRIMACK.—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- MOMUS.—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- MORENI.—System, Marconi, 1000.
- MORRO CASTLE.—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- NAVAJO (WNJ).—Range, 150; system, Marconi, 480; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- NORWOOD.—Strike out all particulars.
- OLIVETTE.—W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- ONTARIO (KQO).—Range, 150; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- PERSIAN.—System, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- PHILADELPHIA (KDA).—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- PIONEER.—System, Marconi, 1000; hours, X. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
- POLARINE.—System, Marconi, 1000. Note, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
- SABINE.—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- SAN JUAN (KGJ).—Range, 300; system, Marconi, 1000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- STATE OF OHIO.—System, Marconi, 120.

SUWANNEE.—Range, 150; system, Marconi, 1099; W.-L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

S. V. LUCKENBACH.—Name, Onega. Note, Radio station operated and controlled by the Marconi Co. Barber & Co., owner of vessel.

TILlicum.—Strike out all particulars.

WILLIAM O'BRIEN.—Range, 200; system, Marconi, 240; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KGU, *read*, Onega, b. Strike out particulars following the call signals WNL, WSG, and WPT.

MISCELLANEOUS.

LIST OF RADIO STATIONS OF THE UNITED STATES.

The Bureau announces the completion of the 1915 edition of the List of Radio Stations of the United States, containing a list of 5,073 stations. The table given below shows the number of land, ship, special land, and amateur stations contained in this list as compared with the 1914 list:

Station.	1914	1915	Increase.
Government and commercial land stations.....	189	224	35
Government and commercial ship stations.....	895	895	.....
Special land stations.....	54	118	64
General and restricted amateur stations.....	2,796	3,836	1,040
Total.....	3,934	5,073	1,139

The appendix to this list contains several articles of interest to radio operators. These books may be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 15 cents per copy.

Copies of the Radio Communication Laws and Regulations of the United States may also be procured from the Superintendent of Documents at 15 cents per copy.

INTERNATIONAL LIST OF RADIOTELEGRAPH STATIONS.

The Director of the International Bureau of the Telegraph Union, Berne, Switzerland, has announced the completion of the fourth French edition of the Official Nomenclature of Radiotelegraph Stations of the World. The English and German editions of this list are now in the hands of the printer and will be available within a very short time.

CASUALTY REPORT.

The steamship *Mariposa*, of the Alaska Steamship Co., bound from Seattle, Wash., to southern Alaskan ports, grounded at 4.36 a. m., October 6, on the rocky shore off Pointer Island, Llama Passage, about 8 miles from the Indian village of Bella Bella, British Columbia.

SOS signals were transmitted at 4.40 a. m., and were answered by the steamship *Despatch*, of the Border Line Transportation Co., 30 miles distant, the steamship *Senator* of the Pacific Coast Co., 270 miles distant, and the Canadian land station at Triangle Island, British Columbia, approximately 150 miles distant.

The *Despatch* immediately hastened to the scene of the disaster, and after taking off all persons on board the *Mariposa*, remained near by until she could be of no further assistance.

The distress call was transmitted on the emergency radio equipment of the vessel, which was installed on the main deck and which remained above water for six hours, when the vessel slid into deeper water and the apparatus was submerged by the rising tide.

TAHITI RADIO STATION.

The radio station now being built by the French Government on Tahiti Island, Society Islands, will be ready to receive and transmit commercial messages before the close of 1915.

The temporary station, now in course of erection, will be followed by a much more powerful plant. The plans of the temporary station contemplate a 10-kilowatt installation of the type used by the French Government, with a wave length of 600 meters. The towers, two in number, will be 100 meters in height. The station will be expected to reach Awanui, New Zealand; Suva, Fiji; and the Samoan Islands.

Immediately upon the completion of the temporary station, work will begin on a permanent station of much greater power. This permanent 300-kilowatt station will be operated by a 500-horsepower gasoline engine, and will use a wave length of 2500 meters. There will be eight towers, each 100 meters high, erected in parallel rows of four towers. The space between the towers will be 250 meters, and 200 meters between parallels. There will be two antennæ, one of 600 meters wave length, the other of 2500 meters.

With the permanent station it is expected that communication will be established with stations in Cochin-China; South America; Honolulu, Hawaii; San Francisco, Cal.; Sydney; Australia; and even in Martinique and Guadeloupe, West Indies. All material used in the construction of these stations is supplied by the French Government and is shipped from France.

Call letters have not been assigned to the station and rates are not obtainable at the present time.

TEST OF AUXILIARY RADIO EQUIPMENT.

[Test of an Edison storage battery, type B-4-H, W. S., consisting of 100 cells rated at 80 ampere-hour capacity, used as an auxiliary source of power supply for a radio transmitter of the Marconi Wireless Telegraph Co. of America, known as the type P-5, one-half kilowatt (input to transformer primary), 500 cycle, quenched and rotary synchronous gaps. Height of antenna above load line, 95 feet; fundamental wave length, 293 meters.]

Because of the difference of opinion and the absence of any official information as to whether or not certain types of auxiliary apparatus and their source of auxiliary power supply fully comply with section 1 of the act of June 24, 1910, amended July 23, 1912, the Department believes it to be necessary that the various types of apparatus and auxiliary power be officially submitted to a test from time to time, which will furnish the information desired. In view of the above, the Department authorized that such a test be conducted in connec-

tion with the auxiliary equipment installed aboard the Merchants & Miners' Transportation Co.'s steamship *Howard*, plying between Baltimore, Norfolk, and Boston.

This test was conducted from July 13 to 19, 1915, en route from Norfolk to Boston and return from Boston to Baltimore by F. A. Kolster, of the Bureau of Standards, and R. Y. Cadmus, radio inspector, of the Bureau of Navigation, assisted by representatives of the Edison Storage Battery Co. and the Marconi Wireless Telegraph Co. of America.

The Edison battery installed on the steamship *Howard* consists of 100 cells type B-4-H, W. S., rated at 80 ampere hours. This battery supplies power to run a 110-volt motor, which drives the one-half kilowatt, 500-cycle generator of the radio transmitting equipment, and also supplies power for 25 or more deck lights, as illustrated in figure 1.

The voltage of the battery when fully charged is 140. It is necessary, therefore, to have a resistance in series with the battery in order to cut down the voltage at the terminals of the motor to 110. The

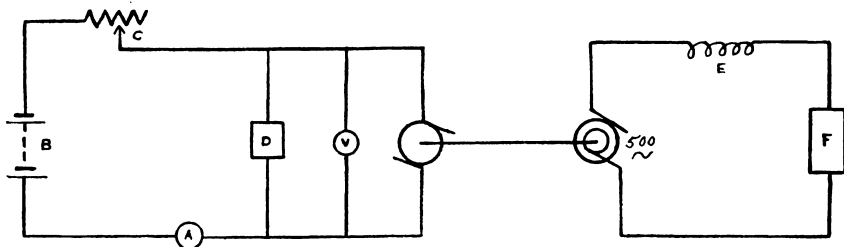


FIG. 1.

A, ammeter; B, 100-cell storage battery; C, variable resistance; D, deck lights; E, reactance; F, 500-watt load; V, voltmeter.

resistance supplied for this purpose is adjustable so that as the battery voltage gradually drops the voltage at the motor terminals can be kept at 110 by decreasing this resistance.

The first test of the battery was started at 6.20 p. m. on July 15, after the battery had been given an overcharge, as recommended by the representative of the Edison company who was present at the tests.

The test was conducted in the following manner: An artificial load of 500 watts was connected to the 500-cycle generator and a bank of about 25 lights was connected to the battery, these lights representing the deck lights proposed in case of emergency. An automatic sending key was connected in the generator circuit so that the load could be thrown on intermittently, as when sending at the rate of 15 to 20 words per minute. The curve shown in figure 2 indicates the behavior of the battery during the time of this test.

The arrangement of 100 cells gave an initial voltage of 140, a series resistance being used to reduce this voltage to 110, which is the voltage for which the motor is designed. This arrangement makes it possible to maintain the required voltage of 110 over a considerable length of time by adjusting the series resistance.

This arrangement is open to criticism, however, because of the fact that it is possible, through carelessness or otherwise, to throw the

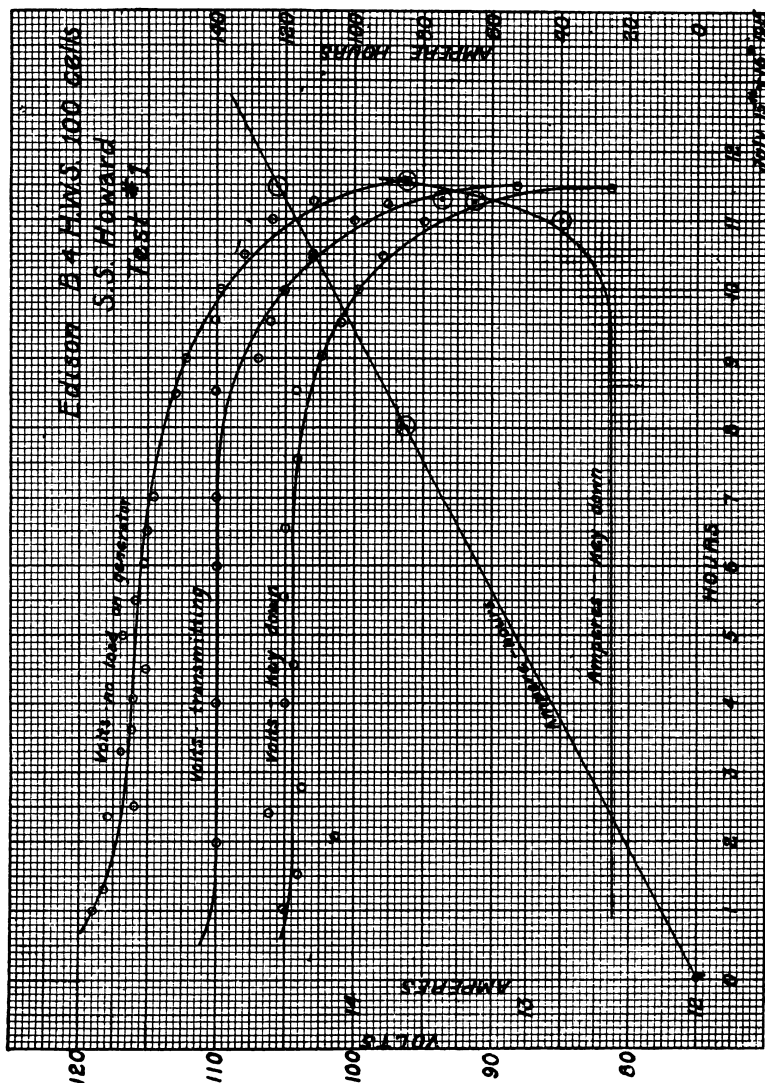


FIG. 2.

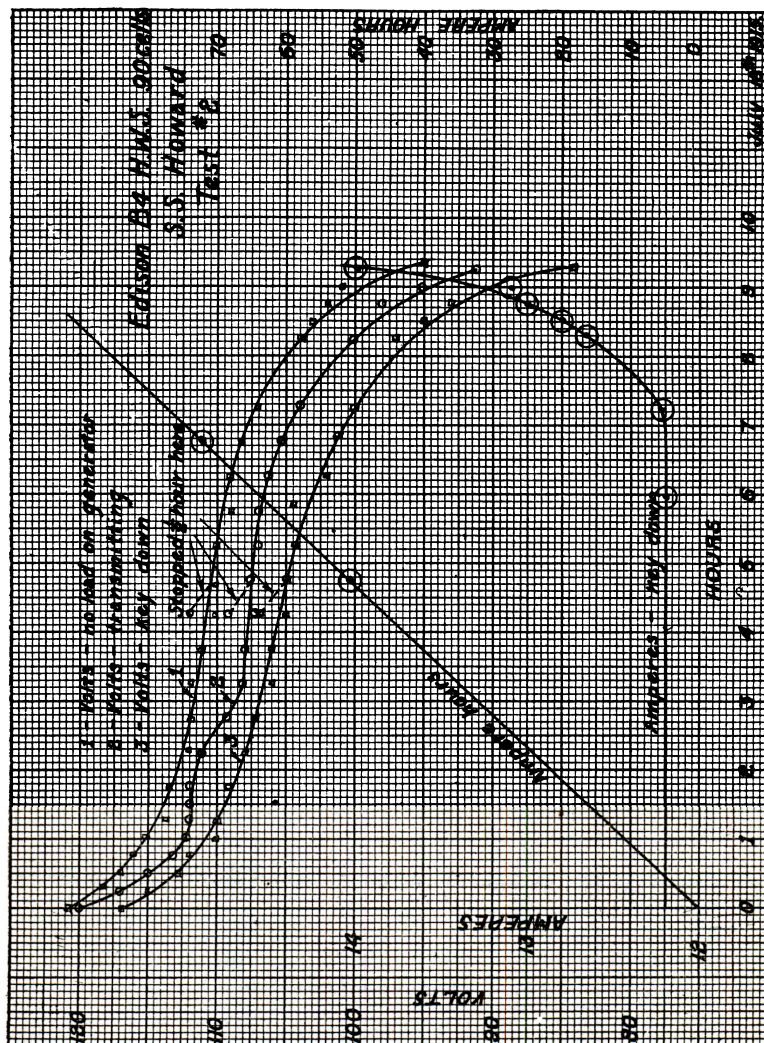


FIG. 3.

entire 140 volts across the motor terminals, in which case the motor would probably be burned out.

A second test of the battery was therefore made on July 18, using only 90 cells instead of 100 cells. The initial voltage of these 90 cells after charge was about 125. No resistance was used in series and the voltage across the motor terminals was not sufficiently in excess of 110 during the first part of the test to cause any motor trouble. The curve shown in figure 3 indicates the behavior of the battery during the time of this test.

It will be noted that the 90-cell battery apparently meets the four-hour and six-hour service requirements of the act of June 24, 1910, amended July 23, 1912, and the London International Convention, respectively, particularly when it is considered that the tests were made under continuous sending conditions, no time being taken for receiving.

Although at no time during the tests did the temperature of the electrolyte show an excessive rise, it has been recommended that proper ventilation be provided in battery compartments.

The motor generator set furnished with this equipment is of the inductor type. Small motor generator sets generally require careful attention, and since these machines must be depended upon in emergency cases frequent inspection is necessary. Therefore radio inspectors should make a careful examination of these motor generator sets at each inspection, particularly of the motor brushes, bearings, and oil chambers.

The radio transmitter furnished is of modern design, efficient, and easily operated. Provision has been made for the use of wave lengths of 300, 450, and 600 meters. The transmitter may be set for any of these wave lengths by means of a simple switch. The antenna current was found to be about 6 amperes for 450 and 600 meters and about 4 amperes for 300 meters.

Under these conditions it is believed that the requirement of 100 miles communication will be fulfilled, as indicated in the range tests given below, conducted while en route from Norfolk to Boston and return to Baltimore.

Date.	Time. ¹	Position of steamship Howard.	Receiving stations.	Distance in nautical miles.
1915.				
July 14...	4.55 a. m..	21 miles NE. of Winter Quarter Light.	Virginia Beach, Va.....	105
July 14...	5.00 a. m..	22 miles NE. of Winter Quarter Light.	S. S. Juniata, 3 miles NE. of Cape Charles.	110
July 14...	5.27 a. m..	28 miles NE. of Winter Quarter Light.	Cape Hatteras, N. C.....	211
July 14...	5.45 a. m..	33 miles NE. of Winter Quarter Light.	S. S. Juniata, abreast of Smith Island.	101
July 14...	6.22 a. m..	42 miles NE. of Winter Quarter Light.	S. S. Juniata, off Virginia Capes...	117
July 14...	4.00 p. m..	7 miles E. of Fire Island.....	S. S. Gloucester, lat. 39° 12' N., long. 73° 27' W.	87
July 15...	9.00 a. m..	5 miles NNE. of Sluce Lightship..	Nantucket Lightship.....	83
July 18...	5.15 a. m..	Off Cape Henry.....	S. S. Juniata, 18 miles NE. of Winter Quarter Light.	100
July 18...	5.45 a. m..	.....do.....	S. S. Juniata, 25 miles NE. of Winter Quarter Light.	107
July 18...	6.45 a. m..	Near Old Point Comfort.....	S. S. Juniata, 40 miles NE. of Winter Quarter Light.	127
July 18...	7.00 a. m..	.....do.....	S. S. Powhatan, off Sparrows Point	160

¹ Weather clear, static medium, during all tests.

The receiving apparatus is of modern type and much more efficient than the older types. It has been recommended that means be provided in these receivers for connecting the detector and telephones in the antenna or primary circuit for "listening in" purposes, and the inductance position with the series condenser short circuited should be plainly marked for 600 meters. This would enable the operator more quickly to hear calls without disturbing the secondary circuit of his receiver and the coupling position of his coils.

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RADIO SERVICE BULLETIN
DEC 15 1915

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, December, 1915—No. 12

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Name.	Call signal.	System.	Wave lengths.	Service.	Hours.
Fort Constitution, N. H. ¹	WZE	U. S. Army.....	825	O	X
Fort Dade, Fla. ¹	WZK	do.....	825	O	X
Fort Moultrie, S. C. ¹	WZF	do.....	825	O	X

¹ Radio station operated and controlled by the United States Signal Corps, War Department, Washington, D. C.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Name.	Call signal.	System.	Wave lengths.	Service.	Hours.
Alaska ¹	WWS	Kilbourne & Clarke, 240...	300, 450, 500, 600	PG	X
Edna ²	WSP ³	Marconi.....	300, 600		
Galatea ³	WGF	Halcun, 240.....	300, 600	PG	X
Mackinaw ⁴	WHW		300, 600		
Nevada ⁴	WFD	Composite.....	300, 600	PG	X
North America ⁴	KRU	Marconi.....	300, 600		
Orleanian ⁵	KON		300, 600		
Pacific.....	WRD		300, 600		

¹ Range, 100; rates, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by the Alaska Steamship Co., owner of vessel.

² Sudden & Christensen, owner of vessel.

³ Radio station operated and controlled by the Marconi Co. E. L. Ford, owner of vessel.

⁴ Range, 500; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by George and James Flood, owners of vessel.

⁵ Goodrich Transit Co., owner of vessel.

⁶ Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Radio station operated and controlled by the Merritt & Chapman Derrick and Wrecking Co., owner of vessel.

⁷ R. Lawrence Smith (Inc.), owner of vessel.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

Name.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Lexington, Ky.....	9YL	500, 1800	P	X	Otto Holstein (Co. A, Signal Corps, Ky. N. G.).
Marion, Ohio.....	8ZD	200, 425	P	X	Keith Henney.
New Braunfels, Tex.....	5ZB	200, 450	P	X	Arthur E. Mollenhauer.
San Jose, Cal.....	6XF	300, 600, variable	P	X	Charles D. Herrold.
Wayne, Nebr.....	9YT	300, 425	P	X	U. S. Conn, president State Normal School.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b—ship station; c—land station.]

Call signal.	Name.	Call signal.	Name.
KON	Orleanian.....b	WSP	Edna.....b
KRU	North America.....b	WWS	Alaska.....b
WFD	Nevada.....b	WZE	Fort Constitution, N. H.....c
WGF	Galatea.....b	WZF	Fort Moultrie, S. C.....c
WHW	Mackinaw.....b	WZK	Fort Dade, Fla.....c
WRD	Pacific.....b		

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
5ZB	Fifth district: New Braunfels, Tex.	8ZD	Eighth district: Marion, Ohio.
6XF	Sixth district: San Jose, Cal.	9YL	Ninth district: Lexington, Ky.
		9YT	Wayne, Nebr.

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

- Name =Name of station.
 G. loc. =Geographical location: O=west longitude, N=north latitude.
 Call =Call letters assigned.
 System =Radio system used and sparks per second.
 Range =Normal range in nautical miles.
 W. L. =Wave lengths assigned: Normal wave length in italics.
 Service =Nature of service maintained:
 PG=General public.
 PR=Limited public.
 P=Private.
 O=Government business exclusively.
 Hours =Hours of operation:
 N=Continuous service.
 X=No regular hours.
 m=a. m. (12m=midday).
 s=p. m. (12s=midnight).
 Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)
 Notes =Refer to notes in the Berne list.

OTHER ABBREVIATIONS.

Marconi Co.=Marconi Wireless Telegraph Co. of America.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- CHICAGO, ILL. (WGO).—Hours, 7m–6s, 8s–7m.
 EAST SAN PEDRO, CAL.—Notes, Radio station operated and controlled by the Marconi Co. The station also communicates with Avalon, Cal. For radiotelegrams exchanged with the ships *Hermosa* and *Cabrillo*, 2 c. per word 20 c. minimum per radiogram (address and signature free of charge). For radiotelegrams exchanged with Avalon, Cal., 3 c. per word 30 c. minimum per radiogram.
 GRAND HAVEN, MICH.—Hours, 7m–11m, 8s–11s.
 JACKSONVILLE, FLA.—Range, 200; system, Marconi, 240.
 LUDINGTON, MICH.—Hours, 7m–11m, 12m–6s, 8s–1m, 2m–7m, when lake is open to navigation.
 MANITOWOC, WIS.—Hours, 8m–11.30m, 2.30s–6s, 7.30s–8.30s, time of the meridian 90° west of Greenwich.

MILWAUKEE, Wis.—Hours, 8m–12m, 1s–5m.

SAVANNAH, GA.—W. L., 300, 550, 600.

SEA GATE, N. Y.—Range, 200; system, Marconi, 1000.

SEATTLE, WASH. (KPA).—Range, 250; system, Marconi, 1000; W. L., 300, 540, 600, 1700, 3100; service, PG and limited commercial. Note, Radio station operated and controlled by the Marconi Co.

UNDERWOOD, WASH.—G. loc. (approximate), 0 45° 45' 00", N. 121° 32' 00"; range, 75; system, composite, 400; W. L., 300, 600, 1700; hours, X.

VIRGINIA BEACH, VA.—Range, 200; system, Marconi, 480.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ADMIRAL EVANS.—Range, 250.

ADMIRAL WATSON.—Strike out all particulars.

ALAMO.—System, Marconi, 1,000; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

ALLIANCE.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

ANN ARBOR No. 3.—Hours, X.

ANN ARBOR No. 4.—Hours, X.

ANN ARBOR No. 5.—Hours, X.

ANTILLA.—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

ATENAS.—System, National Electric Signaling Co., 1,000.

CAMDEN.—System, Marconi, 400; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

CARLOS.—Range, 500; system, Halcun, 240; W. L., 300, 500, 600. Note, Radio station operated and controlled by the Olscn & Mahony Steamship Co., owner of vessel.

CHINA.—Notes, Radio station operated and controlled by the Marconi Co. China Mail Steamship Co., owner of vessel.

CITY OF ALPENA II.—System, Kilbourne & Clark, 120; W. L., 300, 450, 500, 600. Note, Radio station operated and controlled by the Detroit & Cleveland Navigation Co., owner of vessel.

CITY OF AUGUSTA.—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

CITY OF DETROIT II.—System, Kilbourne & Clark, 120; W. L., 300, 450, 500, 600; hours, X. Note, Radio station operated and controlled by the Detroit & Cleveland Navigation Co., owner of vessel.

CITY OF GRAND RAPIDS.—Hours, X.

CITY OF MACKINAC II.—System, Kilbourne & Clark, 120; W. L., 300, 450, 500, 600. Note, Radio station operated and controlled by the Detroit & Cleveland Navigation Co., owner of vessel.

CITY OF ST. IGNACE.—System, Kilbourne & Clark, 120; W. L., 300, 450, 500, 600. Note, Radio station operated and controlled by the Detroit & Cleveland Navigation Co., owner of vessel.

CONGRESS.—Range, 150; system, Marconi, 480.

CORNING.—System, Marconi. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.

CREOLE.—Range, 300; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

DE SOTO.—System, Marconi. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.

FORT BRAGG.—Strike out all particulars.

FRIEDA.—Strike out all particulars.

GOVERNOR.—System, Marconi, 480.

GRACE DOLLAR.—Range, 100; system, Marconi, 480.

HOLLAND (WDW).—Hours, X.

HUMBOLDT.—System, Marconi, 240.

- MANCHURIA.**—Notes, Radio station operated and controlled by the Marconi Co. Atlantic Transport Co., owner of vessel.
- MARIPOSA.**—Strike out all particulars.
- MONGOLIA.**—Notes, Radio station operated and controlled by the Marconi Co. Atlantic Transport Co., owner of vessel.
- MUSKOGEE.**—System, Marconi. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
- NACOOCHEE.**—Range, 300; system, Marconi, 1,000.
- NORTHLAND (WNX).**—Strike out all particulars.
- ONEGA.**—Hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- PARAISO.**—Range, 200; system, Marconi, 480.
- PARISMINA.**—System, National Electric Signaling Co., 1,000.
- PERE MARQUETTE.**—W. L., 300, 500, 600; hours, X; service, limited commercial; strike out rates. Notes, Radio station operated and controlled by the Marconi Co. Pere Marquette Railroad Co., owner of vessel.
- PERE MARQUETTE 17.**—W. L., 300, 500, 600; service, limited commercial; hours, X; strike out rates. Notes, Radio station operated and controlled by the Marconi Co. Pere Marquette Railroad Co., owner of vessel.
- PERE MARQUETTE 18.**—W. L., 300, 500, 600; service, limited commercial; hours, X; strike out rates. Notes, Radio station operated and controlled by the Marconi Co. Pere Marquette Railroad Co., owner of vessel.
- PERE MARQUETTE 19.**—W. L., 300, 500, 600; service, limited commercial; hours, X. Notes, Radio station operated and controlled by the Marconi Co. Pere Marquette Railroad Co., owner of vessel.
- PERE MARQUETTE 20.**—W. L., 300, 500, 600; service, limited commercial; hours, X. Notes, Radio station operated and controlled by the Marconi Co. Pere Marquette Railroad Co., owner of vessel.
- PETROLITE.**—System, Marconi, 1,000. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
- PRESIDENT.**—System, Marconi, 240. Notes, Radio station operated and controlled by the Marconi Co. Pacific Coast Steamship Co., owner of vessel.
- PRINCETON (KST).**—System, Marconi, 1,000. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
- PROTEUS (KKP).**—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- SAN MATEO.**—Range, 300; system, Wireless Specialty Apparatus Co., 1,000; service, PG; hours, X; rate 8 c. per word 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Tropical Radio Telegraph Co. San Mateo Steamship Corporation, owner of vessel.
- SIBERIA.**—Notes, Radio station operated and controlled by the Marconi Co. Atlantic Transport Co., owner of vessel.
- SILVER SHELL.**—Range, 400; system, Marconi, 1000; W. L., 300, 450, 600; service, PG; hours, X.
- SOUTH AMERICAN (KVV).**—Strike out all particulars.
- VANADIS.**—Note, Radio station operated and controlled by Morton F. Plant, owner of vessel (yacht).
- WESTERN STATES.**—System, Kilbourne & Clark, 120; W. L., 300, 450, 500, 600. Note, Radio station operated and controlled by the Detroit & Cleveland Navigation Co., owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out particulars following the call signals KFF, KVV, WAW, WHP, WLH, and WNX.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

- BOSTON, MASS. (1XB).**—Strike out all particulars.
- MONTGOMERY, ALA.**—W. L., 500, 1650, 1800.
- SAN FRANCISCO, CAL. (6XH).**—W. L., 300, 600, variable.
- ST. DAVIDS, PA.**—W. L., 425; 500.

MISCELLANEOUS.**RADIO STATIONS OF THE UNITED STATES.**

[Nov. 1, 1915.]

Government, commercial, and special land stations.

Controlled by—	General public.		Limited public.		Limited commercial.		Government, official.		Special. ¹		Total.	
	1914	1915	1914	1915	1914	1915	1914	1915	1914	1915	1914	1915
United States Navy.....	23	21	.....	1	.....	.....	25	33	.....	.....	48	55
United States Army.....	7	9	.....	.....	.....	.....	32	39	.....	.....	39	48
Philippine insular government.....	6	6	.....	.....	.....	.....	.....	.....	.....	.....	6	6
Marconi Co.....	58	45	3	4	1	10	.....	.....	.....	1	62	60
National Electric Signaling Co.....	1	2	1	.....	1	1	.....	.....	.....	.....	3	3
Tropical Radio Telegraph Co.....	2	2	.....	.....	.....	.....	.....	.....	.....	.....	2	2
Federal Telegraph Co.....	.....	3	6	4	2	1	.....	.....	.....	.....	8	8
Mutual Telephone Co. (Ltd.).....	3	3	2	.....	.....	2	.....	.....	.....	.....	5	5
Unclassified ²	5	7	.....	3	9	32	2	2	54	127	70	171
Total.....	105	98	12	12	13	46	59	74	54	128	243	358

Ship stations.

Controlled by—	Number.		Controlled by—	Number.	
	1914	1915		1914	1915
United States Navy.....	248	228	Alaska Steamship Co.....	.....	12
United States Coast Guard.....	25	24	Standard Oil companies.....	.....	11
United States Army.....	34	51	Pacific-Alaska Navigation Co.....	.....	5
United States Department of Commerce.....	6	7	Federal Telegraph Co.....	.....	5
Marconi Co.....	330	367	Atlantic Communication Co.....	15	3
National Electric Signaling Co.....	19	20	Unclassified ²	197	120
Tropical Radio Telegraph Co.....	21	21	Total.....	895	895
American-Hawaiian Steamship Co.....	.....	21			

¹ Including experimental and special amateur.² Includes individually operated stations.*Amateur stations.¹*

District and headquarters.	Number.		District and headquarters.	Number.	
	1914	1915		1914	1915
1. Boston, Mass.....	374	542	7. Seattle, Wash.....	114	203
2. New York, N. Y.....	503	636	8. Cleveland, Ohio.....	456	785
3. Baltimore, Md.....	543	682	9. Chicago, Ill.....	172	515
4. Savannah, Ga.....	36	54	Total.....	2,796	3,836
5. New Orleans, La.....	36	56			
6. San Francisco, Cal.....	552	333			

¹ To July 1.

Summary.

Kind of station.	Number.		Kind of station.	Number.	
	1914	1915		1914	1915
Government land stations.....	93	109	Government land and ship stations.....	406	419
Private, commercial, and private special land stations.....	150	249	Private commercial and private special stations, land and ship.	732	834
Total.....	243	358	Total.....	1,138	1,253
Government ship stations.....	313	310	Amateur stations.....	2,796	3,836
Private commercial and private ship stations.....	582	585	Grand total.....	3,934	5,089
Total.....	895	895			

LOS ANGELES AMATEURS REPORTED FOR VIOLATIONS.

During a recent visit of V. Ford Greaves, radio engineer of the Bureau, and Ellery W. Stone, assistant radio inspector at San Francisco, the following Los Angeles amateur radio stations were found to be operating in violation of the radio act, and the cases have been referred to the United States district attorney for prosecution:

Hadys Hancock, Venice Pier, Venice, Cal., was found to be using a wave length in excess of 200 meters; maximum penalty, \$100.

Richard White, 435 Oakland Avenue, Pasadena, Cal., operating an amateur station without a license and using improper call letters; maximum penalty, \$100 fine and imprisonment for not more than two months.

Ernest Underwood, 903 Commercial Street., Inglewood, Cal., using a wave length in excess of 200 meters; maximum penalty, \$100.

George Vodra, 211 South Avenue, Los Angeles, Cal., using an amateur sending station without either station or operator's license; maximum penalty, \$100 and imprisonment for not more than two months.

Stuart Dalton, 121 East Twenty-third Street, Los Angeles, Cal., using a wave length exceeding 200 meters; penalty, \$100.

Harry Blodgett, 1953 Bonsallo Avenue, Los Angeles, Cal., using a transmitting station for some time without station or operator's license; maximum penalty, \$100 fine and imprisonment for two months.

METHOD OF CORRECTING LIST OF RADIO STATIONS OF THE UNITED STATES.

The following method of keeping the List of Radio Stations of the United States up to date by means of the Radio Service Bulletin is published for the information and guidance of those concerned:

The blank pages provided at the back of the List of Radio Stations should be numbered from 1 to 24.

The list of new stations published in the Radio Service Bulletin should be cut out and pasted on one of these blank pages.

The names and call letters of new stations should then be written on the margin of the proper page in the main list, with an arrow indi-

cating the proper alphabetical position. Following the name and call letter should be written the number of the page at the back of the book on which the particulars regarding the new station appear. This constitutes an alphabetical index to new stations.

The names of new stations should be written in the main list under the heading "Land and ship stations, alphabetically by call signals," showing the proper call signals as published in the bulletin. All of the call signals allotted to the United States are published in the list and followed by blanks for this purpose.

As there is not space in the main list in which to write changes concerning particulars of stations, the tables of alterations and corrections published in the bulletin should be cut and pasted on the blank pages provided at the back of the List of Radio Stations in such a manner as to permit the reading of both sides of a sheet thus inserted. Following the name of the station in the List of Radio Stations, the particulars of which have been altered, should be written the number of the page in the back of the book on which the changes may be found. Where the alterations and corrections affect only the Berne list the reference note may be omitted. The names of stations which have been discontinued or dismantled should be crossed out on the main list.

Corrections or changes in call letters should be written in the List of Radio Stations under the proper heading.

AMENDMENTS.

The Radio Laws and Regulations of the United States, edition of July 27, 1914, are hereby amended as follows:

Page 66, paragraph 149, should read:

Amateurs should write to the nearest examining officer in their vicinity (see pars. 134-145) for Form 756 "Application for operator's license," and to the radio inspector in their vicinity for Form 762 "Amateur applicant's description of apparatus."

Foreign-born applicants for station licenses must submit satisfactory evidence of their citizenship.

Page 67, paragraph 156, add the following sentence:

Licenses will not be signed by examining officers until the oath of secrecy has been properly executed.

Page 67, paragraph 160, last sentence should read:

Licenses held by them must be submitted to the examining officer.

Page 67, paragraph 161, should read:

Radio operators who pass the examination for a higher-grade license are required to submit their existing licenses to examining officers to be marked "Canceled."

Page 67, paragraph 162, should read:

Expired or canceled licenses will be returned to the licensees, marked "Canceled" or "Expired" in red across their faces, provided the particulars on Form 756, submitted herewith, are found correct by the examining officer. The service record shown on the reverse side of the license must be transcribed on Form 756.

Page 70, paragraph 175, should read:

Whenever practicable, the radio inspector shall satisfy himself on his visit before the departure of a steamer subject to the act of June 24, 1910, as amended July 23, 1912, that the radio apparatus is efficient and in good working order within the meaning of the act. If the apparatus does not comply with the law, the radio inspector will furnish the master with the stub of Form 771 "inspection record" on which will be noted the particulars in which the apparatus does not comply with the law. Where apparatus is found to be in compliance with the law, the stub of Form 771 will not be detached.

Page 70, paragraph 176, should read:

Masters of vessels entering a port of the United States and expecting to leave under the act of June 24, 1910, as amended July 23, 1912, should file Form 753a "Radio declaration" (Appendix A) in duplicate with the customs officer at the time of entry. The customs officer will furnish one copy to the radio inspector in order that proper inspection of the radio equipment may be made before departure.

Page 70, paragraph 177, should read:

For each departure of a steamer under the act of June 24, 1910, as amended July 23, 1912, the master is required to furnish to the customs officer a certificate in the form of Appendix B (Form 753b) "Master's certificate of radio apparatus." Such certificates shall be retained in the files of the collectors of customs. The collector of customs will arrange for the collection of these certificates at all times.

Page 75, Radio Service forms, Appendix A, should read:

Radio service Form 753a.

RADIO DECLARATION

(To be submitted in duplicate)

DEPARTMENT OF COMMERCE

BUREAU OF NAVIGATION

RADIO SERVICE

NOTICE.—“The radio equipment must be in charge of two or more persons skilled in the use of such apparatus, one or the other of whom shall be on duty at all times while the vessel is being navigated. Such equipment, operators, the regulation of their watches, and the transmission and receipt of messages, except as may be regulated by law or international agreement, shall be under the control of the master, in the case of a vessel of the United States; and every willful failure on the part of the master to enforce at sea the provisions of this paragraph as to equipment, operators, and watches shall subject him to a penalty of one hundred dollars.”—*Act of July 23, 1912.*

PORT OF.....

DATE....., 191

This is to certify that the.....
(Nationality.)

S. S.

of the
(Name of company or line.)

of which I am master, entered this port on....., 191 ,

having in crew persons and licensed or certified to
(Number.)

carry passengers; that the said vessel { is is not } *
(Number.)

equipped with radio apparatus as required by the act of June 24, 1910, as amended

July 23, 1912; that the radio station is in charge of..... properly licensed
(Number.)

radio operators and the apparatus is in { efficient } condition.
{ inefficient }

.....
Master or Agent.

This form should be filed in duplicate with the collector of customs at time of entry, who will furnish one copy to the radio inspector of the district on the date of entry in order that proper inspection may be made of the radio apparatus prior to the clearance of the vessel.

* Strike out is or is not as the case may be.

† Strike out efficient or inefficient as the case may be.

Page 75 (Radio Service forms). The form number of Appendix B has been changed from 753 to 753b, the form remaining as heretofore.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, January, 1916—No. 13

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1916.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

19746—15

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

Station.	Longitude and latitude (approximate).	Call signal.	Range.	System.	Wave lengths.
Anderson ¹		WZM		U. S. Army.....	
Buckroe ¹		WZL		do.....	
Colorado Springs, Colo. ²	O 104 50 00 N 38 48 00	KIY	70	Clapp-Eastham...	300.425
Fort Caswell, N. C. ³		WUT		U. S. Army.....	825

¹ Service, 0; radio station operated and controlled by the U. S. Signal Corps, War Department, Washington, D. C. School ship, located at Fort Monroe, Va.

² Service, limited commercial; hours, X; radio station operated and controlled by Herbert C. Colburn.

³ Service, 0; hours, 6m.-10s.; radio station operated and controlled by the U. S. Signal Corps, War Department, Washington, D. C.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Owner of vessel.
Dochra* ¹	KGL	Marconi...	300,600	La Plata Steamship Co.
Eurana.....	KJG	do.....	300,600	Walker, Armstrong & Co.
Munamar.....	KUI	Marconi...	300,600	Munson Steamship Line.
Orianian ¹	KON	do.....	300,600	R. Lawrence Smith (Inc.).
Virginia (KFR)* ¹	KFR	do.....	300,600	Harby Steamship Co.

* Service, PG.

¹ Rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service, 8c. per word 80c. minimum per radiogram. Radio station operated and controlled by the Marconi Co.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Cambridge, Mass.....	1XO	1 300,600	P	X	General Radio Co.
Frankvale, Cal.....	6XN	1 300,600	P	X	National Wireless Telephone & Telegraph Co.
Houston, Ohio.....	8ZG	200,425	P	X	Henry W. Campbell.
Newark, Ohio.....	8ZI	200,425	P	X	Roy C. Burr.
Oberlin, Ohio.....	8ZO	200,425	P	X	Ross Gunn.
Salt Lake City, Utah.....	6ZV	200,300,425	P	X	Julian G. McCollom.
San Francisco, Cal.....	6XO	1 300,600	P	X	National Wireless Telephone & Telegraph Co.

¹ Variable.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
KFR	Virginia.....b	KUI	Munamar.....b
KGL	Dochra.....b	WUT	Fort Caswell, N. C.....c
KIY	Colorado Springs, Colo.....c	WZL	Buckroe.....c
KJG	Eurana.....b	WZM	Anderson.....c
KON	Orianian.....b		

SPECIAL LAND STATIONS GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1XO	First district: Cambridge, Mass.		
6XN	Sixth district:	8ZG	Eighth district:
6XO	Fruitvale, Cal.	8ZI	Ironton, Ohio.
6ZV	San Francisco, Cal.	8ZO	Norwalk, Ohio.
	Salt Lake City, Utah.		Oberlin, Ohio.

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.

G. loc. =Geographical location: O=west longitude, N=north latitude.

Call =Call letters assigned.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths assigned: Normal wave lengths in italics.

Service=Nature of service maintained:

PG=General public.

PR=Limited public.

P=Private.

O=Government business exclusively.

Hours =Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m. (12m=midday).

s=p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

OTHER ABBREVIATIONS.

Marconi Co.=Marconi Wireless Telegraph Co. of America.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

AVALON, CAL.—System, Marconi, 240; W. L., 300, 530, 600.

CAPE HATTERAS, N. C.—System, Marconi, 430; W. L., 300, 550, 600; service, PG and PR. Notes, Radio station operated and controlled by the Marconi Co.

The station corresponds with a station at Virginia Beach, Va., when Weather

Bureau's wire is out of order; rate, 1 c. per word 10 c. minimum per radiogram.

KAWAIHAE, T. H.—Service, limited commercial; strike out rates.

LAHAINA, ISLAND OF MAUI, T. H.—Service, limited commercial; strike out rates.

LIHUE, ISLAND OF KAUAI, T. H.—Service, limited commercial; strike out rates.

OAKLAND, CAL.—Range, 150; system, Composite, 1,000.

PHILADELPHIA, PA. (WHE).—Range, 100; system, Marconi, 240; service, PG and limited commercial.

SAN LUIS OBISPO, CAL.—Strike out all particulars.

WAHIAWA, ISLAND OF OAHU, T. H.—Service, PG.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- AL-KI.**—Range, 100; system, Marconi, 240.
BAYWAY.—System, Marconi, 1,000.
BRADFORD.—System, Marconi.
CHICAGO (WFI).—Hours, X.
CHRISTOPHER COLUMBUS.—Hours, X.
CITY OF ATLANTA.—System, Marconi, 1,000; W. L., 300, 450, 600.
COLORADO (KEA).—Strike out all particulars.
DACIA.—Strike out all particulars.
EASTLAND.—Strike out all particulars.
ELLINGTON.—Range, 40; system, Composite; W. L., 300, 600; service, 0; hours, 10m-10.30m, 9s-9.30s.
HILONIAN.—System, Marconi, 480.
IAQUA.—System, Marconi; Notes, Radio station operated and controlled by the Marconi Co. John A. McGregor, owner of vessel.
ILLINOIS (WCZ).—Hours, X.
LLAMA.—Strike out all particulars.
MINNESOTA (WEK).—Notes, Radio station operated and controlled by the Marconi Co. Northern Michigan Transportation Co., owner of vessel.
MOTANO.—System, Marconi, 1,000.
NANTUCKET.—Range, 150; system, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
NEVADA.—Range, 100; system, Kilbourne & Clark, 120; W. L., 300, 450, 500, 600; service, PG; hours, X; rate, 2 c. per word 20 c. minimum per radiogram. Note, Radio station operated and controlled by Goodrich Transit Co., owner of vessel.
NEW YORK (KSN).—System, Marconi, 480; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
PACIFIC (WRD).—Strike out all particulars.
PIONEER (WPM).—Call, WPN.
POWATAN (KQY).—Range, 150; system, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word, 40c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
ROMA (WTE).—Name, Tamesi; system, Marconi. Note, Freeport & Tampico Fuel Oil Transportation Corporation, owner of vessel.
SOMERSET (KSU).—System, Marconi, 1,000.
VIGILANCIA.—Notes, Radio station operated and controlled by the Marconi Co. Marine Transport Service Corporation, owner of vessel.
WINDOM.—Name, Comanche.
ZAFORA.—Note, Radio station operated and controlled by the Booth Fisheries Co., owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

NRW, *read* Comanche b; WTE, *read*. Tamesi b; strike out particulars following the call signals, KDN, KEA, KGD, KSI, WFN, and WRD.

MISCELLANEOUS.

LOS ANGELES AMATEURS REPRIMANDED AND PENALIZED.

Upon a recent inspection trip made by V. Ford Greaves, radio engineer of the Bureau, and Ellery W. Stone, assistant radio inspector at San Francisco, a number of amateurs were reported for violation of the fifteenth regulation of the act of August 13, 1912, for using a wave length in excess of 200 meters, and the following action in these cases has been taken by the Secretary of Commerce:

V. M. Bitz, 825 West Fifty-third Street, Los Angeles, Cal., licenses suspended.

Mark B. Cosby, 356 Hobart Avenue, Los Angeles, Cal., licenses suspended.
 Stuart Dalton, 121 East Twenty-third Street, Los Angeles, Cal., penalty remitted.
 Hadys Hancock, Venice Pier, Venice, Cal., fined.
 Freeman High, 726 West Twenty-seventh Street, Los Angeles, Cal., licenses suspended.
 Horace Kemper, 173½ Loma Drive, Los Angeles, Cal., fined.
 Alfred McLaren, 534 West Forty-ninth Street, Los Angeles, Cal., licenses suspended.
 Ernest Underwood, 903 Commercial Street, Inglewood, Cal., fined.

John Bradley, 120 Julien Avenue, San Francisco, Cal., who was reported by the radio inspector at San Francisco for violation of sections 5 and 7 of the act of August 13, 1912, for the use of fraudulent call signals and interfering with the commercial traffic being handled by the Hillcrest station of the Marconi company and the steamship *J. A. Chanslor*, has been reprimanded by the Secretary of Commerce, and his licenses have been suspended.

LOS ANGELES AMATEURS REPORTED FOR VIOLATIONS.

In addition to the list of names given in Bulletin No. 12, the following amateurs were found to be operating stations without proper licenses, in violation of the radio act, and the cases have been referred to the United States district attorney for prosecution:

George Hawley, 1257 Cypress Avenue, Los Angeles, Cal.
 Jack Hyams, 119½ Spring Street, Los Angeles, Cal.
 Edmund Whiting, 1047 Mignonette Street, Los Angeles, Cal.

The maximum penalty for the above violation is \$500 fine and confiscation of the radio apparatus unlawfully used.

RADIO-SERVICE PERSONNEL.

Charles C. Kolster, assistant radio inspector at New York, N. Y., has been promoted to the position of radio inspector at New Orleans, La., to succeed Arthur R. Rice, who resigned on December 9, 1915. Harry Sadenwater, assistant radio inspector at New York, succeeds Mr. Kolster.

Charles Blankenship, assistant radio inspector at Chicago, Ill., has been transferred to the office of the chief radio inspector, New York, N. Y.

COMMERCIAL EXTRA FIRST-GRADE LICENSES.

The Department issues a special license, known as commercial extra first-grade, to radio operators whose trustworthiness and efficient service entitle them to confidence and recognition. These licenses are given consideration by the Civil Service Commission in examinations for positions requiring knowledge of radiotelegraphy, when experience is rated as a part of such examinations. Applicants for this grade of license must pass a special examination. To be eligible for this examination they must hold commercial first-grade licenses, and their certificates of skill in radio communication, issued under the act of June 24, 1910, or licenses under the act of August 13, 1912, must record 18 months' satisfactory commercial service at sea or at land stations, either or both, during the two years previous to the filing of the application for examination, as shown by indorse-

ment on the license service records, or other satisfactory evidence, and provided that the applicants have not been penalized for a violation of the radio laws and regulations. A speed of at least 30 words per minute, Continental Morse, and 25 words per minute, American Morse (five letters to the word), must be attained. The technical questions and the questions on the radio laws and regulations are considerably wider in scope than those for commercial first grade, and a higher percentage is required.

All examination papers, including the code test sheets, are marked and forwarded to the commissioner of navigation, with a recommendation by the radio inspector or examining officer. Examination papers are marked upon the basis of 100, and licenses are recommended only if 80 or better is attained.

During the past 18 months the Secretary of Commerce has issued commercial extra first-grade licenses to operators in the following order:

E. N. Pickerill, New York, N. Y.
H. Sadenwater, New York, N. Y.
R. R. Carlisle, San Francisco, Cal.
D. I. Moir, Seattle, Wash.
H. B. Herty, New Orleans, La.
E. M. Cadwell, New York, N. Y.
S. E. Miller, San Francisco, Cal.
C. A. Scott, Boston, Mass.
J. A. Worrall, New York, N. Y.
E. K. Oxner, Boston, Mass.
J. W. Swanson, New York, N. Y.
A. E. Gerhard, San Francisco, Cal.

G. A. Geare, Washington, D. C.
H. W. Sinclair, San Francisco, Cal.
J. H. Benson, Philadelphia, Pa.
E. W. Lovejoy, San Francisco, Cal.
Leo F. Whitehead, Boston, Mass.
W. J. Lynch, Brooklyn, N. Y.
F. E. Nickel, San Francisco, Cal.
J. W. Lee, Philadelphia, Pa.
R. B. Black, San Francisco, Cal.
Irving Ellingham, New York, N. Y.
James Maratta, Philadelphia, Pa.
Frank Orth, New York, N. Y.

PRICES OF BERNE PUBLICATIONS.

1. Official Nomenclature of Radiotelegraph Stations:

(a) Fourth edition, August, 1915 (English, French, or German), 3.60 francs per copy, postage not included; 4.90 francs per copy, postpaid.

(b) Supplements to the above list, issued monthly, 5 francs postpaid, for all supplements up to the end of the calendar year 1916.

2. Liste Alphabetique des Indicateurs d'Appel (alphabetical list of call letters):

(a) Third edition, July, 1913, 1.30 francs per copy, postage not included; 1.80 francs per copy, postpaid.

(b) Supplements to the above list to July 1, 1916, including back numbers, 4 francs, postpaid.

3. Conference of Berlin, 1906; 1 volume, 374 pages, 5 francs, postage not included.

4. Conference of London, 1912; 1 volume, 650 pages, 8 francs, postage not included.

5. International Radiotelegraphic Convention of London, with its Final Protocole and Service Regulations Attached; booklet of 35 pages, 40 centimes per copy, postage not included; 55 centimes, postpaid.

6. Extract of Service Attached to the London Convention; 5 centimes per copy, postage not included.

7. Time Signals and Meteorological Radiograms, Transmitted by the Eiffel Tower; 10 centimes per copy, postage not included; 15 centimes per copy, postpaid.

8. General Statistics of Radiotelegraphy; groups of publications relating to the situation on June 30, 1908, and during the years 1910 to 1913, inclusive, 35 centimes per fascicule, postpaid.

The above publications may be procured at the prices stated from the Director of the International Bureau of the Telegraph Union, Radiotelegraphic Service, Berne, Switzerland. Remittances should be made by means of international postal money orders.

ADDITIONAL COPIES

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, February, 1916—No. 14

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Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Owner of vessel.
Amazonia ¹	KOO	Marconi.....	300, 600	R. Lawrence Smith (Inc.).
Arctic ²	WLH	.....	300, 500, 600	Union Lumber (o.
Catania.....	WTI	Marconi.....	300, 600	Huasteca Petroleum Co.
Charles Pratt.....	KSQ	.....do.....	300, 600	Standard Oil Co. of New Jersey.
Dade.....	KXU	.....do.....	300, 600	Miami Steamship Co.
Diana.....	KZM	.....do.....	.....	C. Ledyard Blair.
Floridian ³	WLR	Kilbourne & Clark, 240.	300, 450, 525, 600	American-Hawaiian Steamship Co.
Healdton.....	KOF	Marconi.....	300, 600	Standard Oil Co. of New Jersey.
Henry Williams.....	KRL	.....do.....	300, 600	Vacuum Oil Co.
Jacob Jones.....	NKG	.....do.....	300, 600	United States Naval Radio Service, Radio, Va.
Munwood.....	KUH	Marconi.....	300, 600	Munson Steamship Co.
New York (KUW).....	KUW	.....do.....	300, 600	Texas Co.
Santa Barbara ^{1 4}	WBJ	.....do.....	300, 600	Atlantic & Pacific Steamship Co.
Texas (KUM).....	KUM	.....do.....	300, 600	Texas Co.

¹ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co.

² Station operated and controlled by Higgins Steamship Co.

³ Range, 100; service, PG, hours X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram transoceanic service, 8 c. per word 80 c. minimum per radiogram. Station operated and controlled by the American-Hawaiian Steamship Co., owner of vessel.

⁴ Service, PG.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Columbia, Mo.....	9XQ	425, 800	P	X	University of Missouri.
Fall River, Mass.....	1ZF	200, 425, 600	P	X	Harold C. Bowen.
Lincoln, Nebr.....	9XT	300, 450	P	X	Thomas C. Rice.
Little Rock, Ark.....	5XO	¹ 625	P	X	Ed Cornish.
San Antonio, Tex. (5ZF).....	5ZF	300, 450, 600	P	(²)	Sidney Friederich.
San Antonio, Tex. (5ZR).....	5ZR	200, 300, 450	P	(²)	John C. Rodriguez.
Seattle, Wash. (7XZ).....	7XZ	¹ 600, 680	P	X	University of Washington.
Worcester, Mass.....	1YK	(¹)	P	X	Worcester Polytechnic Institute.

¹ Variable.

² 8 p. m. to 11.30 p. m.

³ 8.15 p. m. to 11.30 p. m.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1YK	First district:	7XZ	Seventh district: Seattle, Wash.
1ZF	Worcester, Mass.	9XQ	Ninth district:
	Fall River, Mass.	9XT	Columbia, Mo.
5XO	Fifth district:		Lincoln, Nebr.
5ZF	Little Rock, Ark.		
5ZR	San Antonio, Tex. (5ZF).		
	San Antonio, Tex. (5ZR).		

SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Call signal.	Name.	Call signal.	Name.
KOF	Healdton.	KXU	Dade.
KOO	Amazonia.	KZM	Diana.
KRL	Henry Williams.	NKG	Jacob Jones.
KSQ	Charles Pratt.	WBJ	Santa Barbara.
KUH	Munwood.	WLH	Arctic.
KUM	Texas.	WLR	Floridian.
KUW	New York.	WTI	Catania.

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.

G. loc. =Geographical location: O=west longitude, N=north latitude.

Call =Call letters assigned.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths assigned: Normal wave lengths in *italics*.

Service=Nature of service maintained:

PG=General public.

PR=Limited public.

P=Private.

O=Government business exclusively.

Hours =Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m. (12m=midday).

s=p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

OTHER ABBREVIATIONS.

Marconi Co.=Marconi Wireless Telegraph Co. of America.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne Bureau.]

ANDERSON.—Notes, Radio station operated and controlled by Coast Artillery Corps, United States Army, Washington, D. C. Training school station, Coast Artillery School, located at Fort Monroe, Va.

BENTON HARBOR, MICH.—Range, 60; system, Marconi, 120.

BUCKROE.—Notes, Radio station operated and controlled by Coast Artillery Corps, United States Army, Washington, D. C. Training school station, Coast Artillery School, located at Fort Monroe, Va.

ENSENADA, P. R.—Hours, week days, 8m–12m, 2s–5s; Sundays, 9m–12m.

JACKSONVILLE, FLA.—Hours, 6m–8m, 10m–1s, 4s–7s.

KVICHAK, ALASKA (KML).—Name Alockanok River, Alaska. Note, Station limited to correspondence with ship and shore stations of the North Alaska Salmon Co.

KVICHAK, ALASKA (KMT).—Name, Hales Creek, Alaska; service, P. Note, Station limited to correspondence with ship and shore stations of the North Alaska Salmon Co.

SEATTLE, WASH. (KPE).—Range, 200; system, Kilbourne & Clark, 240. Notes, Rate, PG, 6 c. per word 60 c. minimum per radiogram.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne Bureau.]

ASTRAL.—Change name to Standard II.

BREAKWATER.—System, Marconi, 120; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, North Pacific Steamship Co., owner of vessel.

CAMINO.—Note, Barber & Co., owner of vessel.

CITY OF COLUMBUS.—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

COAMO.—Note, W. L., 300, 450, 600.

COLON (WHO).—Strike out all particulars.

COLUMBIA (KYM).—Strike out all particulars.

COMAL.—System, Marconi, 1,000; W. L., 300, 450, 600; Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram transoceanic service, 8 c. per word 80 c. minimum per radiogram.

EURANA.—(Incorrectly spelled "Eruana," in list of ship stations, alphabetically by names of vessels, in Bulletin No. 13.) Notes, Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co.

FINLAND.—System, Marconi, 480. Note, Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

GARGOYLE.—Range, 300; system, Marconi, 1,000; service, PG, hours, X. Notes, Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co.

MOHAWK (KVM).—System, Marconi, 1,000; W. L., 300, 450, 600. Note, Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

MUNAMAR.—Range 200; system, Marconi, 480; service, PG; hours, N; Munson Steamship Co., owner of vessel. Notes, Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co.

NEW YORK (KNK).—Strike out all particulars.

OCEANA.—Strike out all particulars.

OWERA.—Strike out all particulars.

PARAGUAY.—System, Marconi, 400; hours, X. Note, Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

PHILADELPHIA (KSM).—System, Marconi, 240. Note, Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

PILOT BOY.—Strike out all particulars.

PONCE.—System, Marconi, 1,000; W. L., 300, 450, 600. Note, Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

ROANOKE.—System, Marconi, 400.

ROSE CITY.—System, Marconi, 400.

ST. PAUL (KSO).—System, Marconi, 480. Note, Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

SANDY HOOK.—Strike out all particulars.

SAN RAMON.—Note, Parr-McCormick Steamship Line, owner of vessel.

SANTA CLARA (WRS).—Strike out all particulars.

SUWANNEE.—Note, Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

TAMESI.—Notes, Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co.

TATOOSH.—Note, Anacortes Fisheries Co.

TEXAS (KUR).—Change name to Georgia.

VIGILANCIA.—Note, Roger L. Farnum, owner of vessel.

WAPAMA.—Note, Wapama Steamship Co., owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KML, *read* Alockanok River, Alaska c; KMT, *read* Hales Creek, Alaska c; KSA, *read* Standard II b; KUR, *read* Georgia b; strike out all particulars following the call signals KNJ, KNK, KNV, KPL, KYM, KZG, WHO, and WRS.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

ILLIOPOLIS, ILL.—Strike out all particulars.
NEW BEDFORD, MASS.—Strike out all particulars.
SPRINGFIELD, ILL.—W. L., 600, 1800.

SPECIAL LAND STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out 1ZO and 9ZK.

MISCELLANEOUS.

PORTUGUESE GOVERNMENT ERECTS RADIO STATION.

Information has just been received from Vice Consul Ramon I. Janer, at Lisbon, to the effect that the Portuguese Government has recently constructed a building near Leixoes (Oporto) for the purpose of installing a radio station, and that the apparatus is to be installed shortly.

THE SAFETY-FIRST EXHIBIT.

The several departments of the Government are arranging a "safety-first" exhibit, to be held in the New National Museum Building, Washington, D. C., during the week beginning February 21, 1916. In connection with the exhibit the Bureau of Navigation Radio Service will display a complete radio set and the various instruments used by radio inspectors in connection with the enforcement of the radio laws. The public is invited to attend this exhibit.

SAGAPONACK STATION CLOSED.

The Sagaponack station of the Marconi company, located at Long Island, N. Y., has been temporarily closed. However, the name of this station should not be stricken from the list unless information to that effect appears in a subsequent bulletin.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, March, 1916—No. 15

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E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Longitude and latitude (approximate).	Call signal.	Range.	System.	Wave lengths.
Metha Nelson (schooner) ¹	O 158 28 00 N 58 45 00	KMP	20	Composite, 100..	300, 500, 600
Navassa Island ²	O 74 52 00 N 18 30 00	WQN	.....	.....	.....

¹ Service, limited commercial; hours, X. Radio station operated and controlled by Alaska Packers' Association. The vessel is moored in Bristol Bay, Alaska, and communicates with stations as Nushagak (KMG) and Clark's Point, Alaska.

² Radio station operated and controlled by Snare & Triest Co.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Owner of vessel.
Arborean.....	WLS	Marconi.....	300, 600	American-Hawaiian Steamship Co.
Artisan.....	WKW	.....do.....	300, 600	Do.
H. H. Rogers.....	KSI	.....do.....	300, 600	Standard Oil Co. of New Jersey.
Joseph Pulitzer ¹	WPZ	Kilbourne & Clark, 240.	300, 450, 525, 600	Port of Portland.
Pearl Shell.....	WIC	Marconi.....	300, 600	Pearl Shell Steamship Co.
Ravalli ²	WGI	.....do.....	300, 600	Pacific Coast Steamship Co.
Yaguez ³	KDY	Marconi, 1,000.....	300, 450, 600	Vacuum Oil Co.

¹ Range, 75; service, PG; hours, X; rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Port of Portland, owner of vessel.

² Range, 100; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.

³ Range, 200; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
KDY	Yaguez..... b	WKW	Artisan..... b
KMP	Metha Nelson (schooner)..... c	WLS	Arborean..... b
KSI	H. H. Rogers..... b	WPZ	Joseph Pulitzer..... b
WGI	Ravalli..... b	WQN	Navassa Island..... c
WIC	Pearl Shell..... b		

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Dallas, Tex.	5ZC	200, 300, 425...	P	X	Frank M. Corlett.
Kansas City, Mo. (9YU)....	9YU	200, 500.....	P	X	Field Company A, Signal Corps, National Guard of Missouri.
La Grande, Oreg.	7ZH	200, 300, 425...	P	X	Orland M. Heacock.
Leonia, N. J.	2ZE	200, 325.....	P	X	Paul F. Godley.
Minneapolis, Minn. (9ZM)....	9ZM	200, 425.....	P	X	Marc Frazer.
Montclair, N. J.	2ZI	200, 325.....	P	X	Adams-Morgan Co.
New Bedford, Mass.	1ZN	200, 300, 425, 600	P	(1)	Milton A. Bayles.
Pullman, Wash.	7YI	500, 1,750	P	X	State College of Washington.
State College, Pa.	8XE	Variable.....	P	(2)	Pennsylvania State College.
Waco, Tex.	5YG	200, 300, 600, 1,625.	P	X	E. T. Genheimer.

¹ Hours, continuous during day and from 6s to 9s.² Hours, 7s to 10.30s.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1ZN	First district: New Bedford, Mass.		
2ZI	Second district: Montclair, N. J.	7YI	Seventh district: Pullman, Wash.
2ZE	Leonla, N. J.	7ZH	La Grande, Oreg.
	Fifth district: Waco, Tex.	8XE	Eighth district: Pennsylvania State College.
5YG	Dallas, Tex.		Ninth district: Kansas City, Mo. (9YU).
5ZC		9YU	Minneapolis, Minn. (9ZM).
		9ZM	

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.

G. loc.=Geographical location: O=west longitude, N=north latitude.

Call =Call letters assigned.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths assigned: Normal wave lengths in italics.

Service=Nature of service maintained:

PG=General public.

PR=Limited public.

P=Private.

O=Government business exclusively.

Hours =Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m. (12m=midday).

s=p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

OTHER ABBREVIATIONS.

Marconi Co.=Marconi Wireless Telegraph Co. of America.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- AKUTAN, ALASKA.**—G. loc., 0 165° 48' 00", N 54° 08' 00"; range, 25; W. L., 300, 500, 600; hours, X.
- GALVESTON, TEX.**—Service, PG and special; rates, PG, 6 c. per word, 60 c. minimum per radiogram; special, 6 c. per word, 60 c. minimum per radiogram (for correspondence with Heald Bank Lightship); for vessels reported by the lightship \$1 for each report. Note, Press dispatches and special service with Heald Bank Lightship conducted on the 500-meter wave length.
- HOBOKEN, N. J.**—W. L., 2,240; service, limited commercial.
- JUALIN, ALASKA.**—G. loc. (approximate), 0 135° 00' 00", N 58° 56' 00"; range, 100; system, Marconi, 120; W. L., 300, 450, 600, 1,600; service, limited commercial; hours, X. Note, Radio station operated and controlled by Jualin Mines Co.
- JUNEAU, ALASKA.**—G. loc. (approximate), 0 134° 25' 00", N 58° 19' 00".
- PREMIER** (moored schooner).—Strike out all particulars.
- SOUTH WELLFLEET, MASS.**—System, Marconi, 233 and 240; hours, X.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- ADVANCE.**—W. L., 300, 450, 600.
- APACHE (KVA).**—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- ARGYLL (WTB).**—Range, 150; system, Federal Poulsen Arc, 250; W. L., 300, 600, 1,800; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Federal Telegraph Co.
- BRABANT.**—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service 8 c. per word 80 c. minimum per radiogram.
- CATANIA.**—Range, 150; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- CHINA.**—Range, 150; system, Marconi, 1,000; W. L., 300, 450, 600. Note, China Mail Steamship Co., owner of vessel.
- CITY OF EVERETT.**—Note, Radio station operated and controlled by Atlantic Communication Co.
- DELAWARE SUN.**—System, Marconi, 400; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- EDNA.**—Strike out all particulars.
- EL ALBA.**—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- EL NORTE.**—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- EURANA.**—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- FLORIDIAN.**—Range, 300; system, Marconi, 1,000; W. L., strike out 525; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- GARGOYLE.**—W. L., 300, 450, 600.
- GEORGIA (KUR).**—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

- GLENPOOL.—W. L., 300, 450, 600; hours, X.
 GOLD SHELL.—Range, 250; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X.
 HARVARD.—System, Federal Poulsen Arc, 360; W. L., 300, 600, 1,800; rates, 4 c. per word 40 c. minimum per radiogram.
 KLAMATH.—System, Marconi, 400.
 LYMAN STEWART.—Range, 150; system, Federal Poulsen Arc, 250; W. L., 300, 600, 1,800.
 MONTEREY (KWY).—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
 NEWPORT (WWH).—Range, 150; system, Marconi, 480.
 NUECES.—Hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram.
 OLEUM.—Range, 150; system, Federal Poulsen Arc; W. L., 300, 600, 1,800; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Federal Telegraph Co.
 PONCE.—Hours, X.
 SAN PABLO.—Strike out all particulars.
 SAN PEDRO.—Strike out all particulars.
 SANTA BARBARA.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X.
 SANTA CRUZ.—Strike out all particulars.
 SANTA MARIA (WTF).—Range, 150; system, Federal Poulsen Arc, 250; W. L., 300, 600, 1,800; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Federal Telegraph Co.
 SATSUMA.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
 SIERRA.—Range, 150; system, Federal Poulsen Arc, 360; W. L., 300, 600, 1,800; rates, 8 c. per word, 80 c. minimum per radiogram.
 SONOMA (WHM).—System, Federal Poulsen Arc, 360; W. L., 300, 600, 1,800. Note, Radio station operated and controlled by Federal Telegraph Co.
 STANLEY DOLLAR.—Strike out all particulars.
 SULTANA.—Strike out all particulars.
 TEXAS (KUM).—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
 TOLEDO.—System, Marconi, 400; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
 VENTURA.—Range, 150; system, Federal Poulsen Arc, 360; W. L., 300, 600, 1,800; rates, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by Federal Telegraph Co.
 WILHELMINA.—System, Marconi, 1,000; W. L., 300, 450, 600.
 YALE.—System, Federal Poulsen Arc, 360; W. L., 300, 600, 1,800; rates, 4 c. per word, 40 c. minimum per radiogram.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all particulars following the call signals KLW, KLX, KMP, KZH, WPA, WSD, and WSP.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

- AGRICULTURAL COLLEGE, N. D.—W. L., 300, 500, variable.
 CANAL DOVER, O.—W. L., 200, 450.
 CINCINNATI, O (8ZF).—W. L., 200, 425.
 GRAND FORKS, N. D.—W. L., 1,500, variable.
 HAMILTON, O.—W. L., 200, 300, 425.
 LOS ANGELES, CAL. (6XL).—W. L., 600, variable.

NORTHAMPTON, MASS.—W. L., 200, 300, 425, 600. Note, Radio station operated and controlled by Dean A. Lewis and G. C. Sabin.
ST. LOUIS, MO. (9XC).—W. L., 700, 825; service, P; hours, X.
SAN FRANCISCO, CAL. (6XD).—Strike out all particulars.
SLINGERLANDS, N. Y.—W. L., 300, 400, 550, 600, 1,000.
SPRINGFIELD, O.—W. L., 200, 300, 450.
WHEELING, W. VA.—W. L., 200, 450.

SPECIAL LAND STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out 6XD (San Francisco, Cal.).

MISCELLANEOUS.

CHANGES IN PERSONNEL.

R. B. Woolverton, radio inspector at San Francisco, Cal., has resigned, effective March 1, 1916, and V. Ford Greaves, radio engineer, will take charge of the San Francisco district temporarily.

CUTTYHUNK ISLAND RADIO STATION ALLOWED TO OPERATE.

The United States Coast Guard has entered into an agreement with Chester Veeder granting him permission to operate his radio station at Cuttyhunk Island under the supervision of the Coast Guard. Mr. Veeder will be allowed the privilege of communicating with amateur stations for practice, or for other purposes, using his amateur call letters, provided the same is not commercial business, and provided the wave length used is 200 meters or lower and does not interfere with commercial or Government radio stations. The superintendent of the Naval Radio Service has assigned the call letters "NSA" to this station when it is operating as a Government station.

RADIO COMMUNICATION CHARTS TO BE ISSUED GRATIS.

The superintendent of the Naval Radio Service announces that, commencing with March, a complete communication chart will be issued to the public gratis upon request. This chart includes the various merchant vessels in North and South American trade, the time and date they may be reached by radio, the coastal stations through which the traffic should be routed, and rates for radio land-line service.

KEY WEST NAVAL RADIO STATION OPEN TO COMMERCIAL TRAFFIC.

The Naval Radio Service has requested the Bureau to issue instructions to operators on all ships to the effect that the Key West station is open to commercial traffic and handles ships' position reports, which are forwarded to the New York Herald not later than 8 p. m. daily.

SPANISH INVENTION OF IMPROVED RADIOGRAM RECEIVER.

El Imparcial, one of the leading dailies of Madrid, states, under date of January 24, 1916, that the Minister of Public Works, after examination and report by the Centro Tecnico de Aeronauticos (a bureau

of the ministry), has approved a radiogram receiver of a type that does away with earpieces. It is said that the radius of the new apparatus is in excess of 5,000 kilometers (the kilometer being the equivalent of about $\frac{5}{8}$ mile), and that it is contemplated to institute radiographic service between Spain and the United States.

ACCESSIONS TO LONDON RADIOTELEGRAPHIC CONVENTION.

The following countries have, since June 28, 1915, acceded to the International Radiotelegraphic Convention signed at London on July 5, 1912: Bolivia, October 13, 1915; Peru, July 12, 1915.

AMENDMENTS.

The Radio Laws and Regulations of the United States, edition of July 27, 1914, are hereby amended as follows:

Page 56, parenthetical clause, lines two and three, paragraph 63, should read:

SEC. 4, fifteenth regulation, act of August 13, 1912.

WIRELESS AS A SAFEGUARD TO LIFE AT SEA.

[The marine disasters described below are in addition to those listed in a publication of the Bureau of Navigation, Radio Service, entitled "Important Events in Radiotelegraphy," dated Feb. 1, 1916.]

1909.

June 10.—Steamship *Slavonia* stranded off Azores. Marconi operator, Stanley Coles, summoned aid by wireless and 410 lives were saved.

1910.

September 9.—Pere Marquette Car Ferry No. 18 sank in middle of Lake Michigan. The SOS call was heard by Ludington wireless station and steamer *Pere Marquette No. 17*. Latter rescued four passengers and two of crew. All others lost their lives, including wireless operator, S. S. Sczpanek.

1911.

November 22.—Steamship *Prinz Joachim* struck rocks at Atwood Bay, Samana Islands. Wireless communication, established direct with New York City, resulted in the saving of all on board.

1912.

February 22.—Steamship *Madison* rammed by steamship *Hipplayit Dumois*. Wireless was the means of saving the entire crew and all the passengers.

April.—Steamship *Denver* in collision with steamship *El Sud* off Galveston Bar. *El Sud* not equipped with wireless, but assistance was sent to *El Sud* in response to *Denver's* calls, and the wrecked vessel was towed into Galveston.

August 16.—Steamship *Pleiades* ran ashore in Magdalena Bay. Operator G. Bennett summoned aid by wireless and all were saved.

December 5.—Steamship *Easton*, of the United States & Dominion Transportation Co., struck on Iroquois Reef, Lake Superior. Wire-

less calls were answered by stations at Port Arthur, Ontario, and Duluth, Minn. Tugs were sent to assistance of stranded steamer in answer to wireless calls and the *Easton* was released with slight damage.

1913.

April.—The *Robert Dollar* while crossing the Columbia River bar struck heavily but could not locate any damage and proceeded on her voyage to Japan. When 100 miles offshore her stern post and rudder broke off close up to her counter and dropped into the ocean, leaving her helpless in a rough sea and a high wind. Communication with shore was established by radio and a tug was sent to assistance of the helpless steamer.

June 13.—Steamship *Yukon* struck reef off Alaskan coast and sank. The radio operators summoned aid by wireless and all were saved.

June 19.—Steamship *Riverside* wrecked and sank off California coast. Wireless was instrumental in saving the lives of all on board.

1914.

August 17.—Steamship *Prince Albert* ran ashore on Butterworth Rocks during dense fog. Assistance was summoned by wireless and all passengers and crew were saved.

August 25.—Steamship *Admiral Sampson* sank after collision with the steamship *Princess Victoria* off Point No Point, near Seattle, Wash. Eight lives were lost. SOS sent out by *Princess Victoria* was picked up by a radio station in Seattle and also by the steamship *Admiral Watson*. A tug was sent from Seattle to the assistance of the *Admiral Sampson*.

September 1.—Steamship *City of Chicago* was reported on fire 12 miles out from Chicago. Wireless was utilized and the ship returned safely to port.

September 18.—Steamship *Francis H. Leggett* sank 60 miles south of Columbia River. The radio station at Astoria, Oreg., intercepted a message to that effect which had evidently been sent from a foreign cruiser to a Canadian station. The Astoria station notified all ships in the vicinity to look for survivors. Two persons were rescued.

October 11.—The steamship *Almirante*, of the United Fruit Co., stranded at Cartagena Harbor; 66 passengers and 90 persons in crew. No lives lost.

October 15.—Steamship *Metapan* rammed and sunk by *Iowan* at the entrance of Ambrose Channel, New York. SOS was answered by vessels in various parts of the harbor.

November 10.—Steamship *Lakeland* ran ashore 8 miles from Alpena. Radio operator sent out distress signals which were answered by shore stations at Cleveland, Buffalo, and Tobermory. The tug *Favorite* was informed and went to *Lakeland's* assistance. Constant communication was maintained between the tug and the distressed vessel.

November 23.—Steamship *Hanalei* struck on reef near Bolinas, Cal. SOS answered by radio station at San Francisco, revenue cutter *McCulloch*, oil tankers *El Segundo* and *Richmond*. Heavy seas and reefs prevented their going to assistance of the distressed vessel which was slowly being pounded to pieces. The wireless cabin was washed away, but Operator Lovejoy established communication with

shore by means of pocket flashlight and directed work of rescue. Forty-three persons were saved.

December 30.—Steamship *Colorado* became disabled off Little Egg Harbor, N. J.; crew of 35; no loss of life. In answer to wireless calls, tugs brought vessel into New York.

1915.

January 10.—Steamship *Mexicano*, Pierce Navigation Co., ran ashore on Tampico, Mexico, Breakwater. The radio operator sent out wireless distress calls, which were answered by Mexican Government station at Tampico. The vessel was floated by tugs.

January 26.—Steamship *Washingtonian* sank after collision with schooner *Elizabeth Palmer* off Delaware Breakwater. All the crew arrived in the ship's boats on the Fenwick Island lightship, from which vessel wireless messages were sent to the steamship *Hamilton*, which stopped and took the wreck victims to New York.

February 4.—Steamship *Colon* stranded off bar at Topolobampa. SOS call answered by U. S. S. *Maryland*, *Korrigan III*, and the U. S. S. *Annapolis*. Passengers and crew were transferred to the *Maryland* and the *Annapolis*.

February 4.—The oil tanker *Chester*, though not equipped with wireless, attracted the attention of the American liner *Philadelphia* by sending the SOS on Morse lights. The radio operator of the *Philadelphia* established communication by this means and 33 men were rescued from the sinking ship.

March 25.—The steamship *Parisian* grounded in Mississippi River. While in this position she was struck, on March 27, by the steamship *Heredia*, of the United Fruit Co. Wireless brought prompt aid to the two distressed vessels.

March 27.—The steamship *Heredia* struck the steamship *Parisian*. (See above.) The *Heredia* had 164 passengers aboard.

April 1.—Steamship *Mexico*, Pacific Steam Navigation Co., ran aground near Southwest Pass, La. Wireless was instrumental in bringing tugs to float vessel.

April 14.—The steamship *Seminole* wrecked off Yuma Bay. Wireless was utilized, but passengers reached shore safely before rescuing vessels arrived.

April 21.—Steamship *San Zeferno* grounded in Galveston Harbor; crew of 40 aboard. Wireless was used to report, but vessel was found to be in no danger.

May 7.—The steamship *Asuncion* ran ashore off Fraser River. Wireless was utilized in summoning tugs to her assistance.

June 16.—Steamship *Alabama* was struck by steamship *Delaware* 53 miles south of Scotland lightship in dense fog. Neither vessel, however, was badly damaged. Wireless was used to notify owners.

July 2.—Steamship *Panuco* grounded at entrance to South Pass, La.; crew of 35 aboard. Wireless used to bring prompt aid to float vessel.

August 23.—Steamship *Metapan* grounded in Cartagena Harbor. There were 45 passengers and 19 in crew. The cargo was promptly discharged into lighters and steamer subsequently floated.

September 13.—Steamship *Sant Anna*, of the Fabre Line, was on fire in midocean, latitude 40° 23' north, longitude 47° 30' west. The SOS call brought the *Ancona*, which took off 600 persons and

conveyed the distressed vessel to port. The *Sant Anna* carried 1,700 persons in addition to the crew.

November 9.—Steamship *Lievatta* (Italian), loaded with cased kerosene and gasoline, caught fire 65 miles east of Sabine Bar, Tex. Reported by wireless by steamship *Gulfstream*, which vessel stood by the burning steamer until other assistance, summoned by wireless, arrived from Port Arthur and Galveston. Without the assistance thus secured the vessel and cargo would have been a total loss.

December 1.—Steamship *Flamenco* ran aground at South Pass, La. The accident was reported by wireless and rescue soon followed.

December 13.—Steamship *Antilla* collided with a barge beached off Sea Gate. Wireless was instrumental in saving the cargo.

1916.

January 17.—Car ferry *Pere Marquette No. 19* ran aground 4 miles north of Ludington, Mich., at 7.30 p. m. Wireless communication was established with Ludington and *Pere Marquette* car ferries *No. 17* and *No. 18*, which were advised not to come in close on account of shoal water. Wireless communication was maintained throughout salvage operations.

January 22.—Steamship *Centralia*, when off Columbia River, broke her rudder and the heavy seas washed away deck load and flooded the engine and wireless rooms. The aerial was carried away, but repaired by the operator, Earl Diamond, who then called SOS. The call was immediately answered by steamships *Governor*, *Adeline Smith*, *Yosemite*, *Admiral Schley*, *Eurana*, and land stations at Marshfield and Eureka. Weather and sea finally moderated and the ship made San Francisco without assistance.

February 1.—Steamship *Tapata Maru* was in collision with the steamship *Silver Shell*. SOS was answered by radio stations at Boston and Cape Race and various steamers. The crew was rescued by the *Silver Shell*.

February 7.—Steamship *Caloria*, of the Standard Oil Transportation Co., ran aground at the head of South Pass, La. A number of tugs and lighters responded to the SOS call and the 31 persons on board the wrecked vessel were rescued.

February 25.—The steamship *Cretan*, of the Merchant & Miners' Line, collided with an unknown vessel off Diamond Shoals, and was thereby rendered a helpless wreck. The 27 passengers aboard were safely transferred to the tramp steamer *Dorothy* which was towed into port by the Coast Guard cutter *Onondaga*, the vessel responding to the *Cretan's* wireless call for help.

February 26.—The French auxiliary cruiser *Provence II* (so designated to distinguish her from French battleship *Provence*) was torpedoed and sunk in the Mediterranean Sea. French and British patrol boats, which were summoned by wireless, rescued 870 persons.

ADDITIONAL COPIES

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, April, 1916—No. 16

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WASHINGTON, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:

E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	System.	Station controlled by—
Inglewood, Cal.....	KFZ	Federal Poulsen Arc.	Federal Telegraph Co.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Owner of vessel.
Admiral Watson ¹	WAW	Kilbourne & Clark, 240.	300, 450 525, 600	Pacific-Alaska Navigation Co.
Barge No. 1.....	WQA	Marconi.....		Inland Navigation Co.
Buccaneer ²	KFO	do.....	300, 600	Freeport & Tampico Fuel Oil Transportation Co.
Curacao.....	WGK		300, 600	Pacific Coast Co.
Ecuador.....	WBN			Pacific Mail Steamship Co.
Fred'k Luckenbach.....	KGv	Marconi.....	300, 600	Edgar F. Luckenbach.
La Brea ³	WON	Federal Poulsen Arc.	300, 600	Union Oil Co.
Lakeport.....	WDJ	Marconi.....	300, 600	Port Huron & Duluth Steamship Co.
Lakewood.....	WDK	do.....	300, 600	Do.
Suruga.....	WGD	do.....	300, 600	Barber & Co. (Inc.).
Tormentor ²	KFN	do.....	300, 600	Freeport & Tampico Fuel Oil Transportation Co.
Venezuela.....	WBG			Pacific Mail Steamship Co.

¹ Range, 150; service, PG; hours, N; rates, 4 c. per word, 40 c. minimum per radiogram. Note, Radio station operated and controlled by Pacific-Alaska Navigation Co., owner of vessel.

² Note, Radio station operated and controlled by Marconi Co.

³ Range, 150; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by Federal Telegraph Co.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship stations; c=land station.]

Call Signal.	Name.	Call signal.	Name.
KFN	Tormentor..... b	WDJ	Lakeport..... b
KFO	Buccaneer..... b	WDK	Lakewood..... b
KFZ	Inglewood, Cal..... c	WGD	Suruga..... b
KGv	Fred'k Luckenbach..... b	WGK	Curacao..... b
WAW	Admiral Watson..... b	WON	La Brea..... b
WBG	Venezuela..... b	WQA	Barge No. 1..... b
WBN	Ecuador..... b		

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Columbia, Mo. (9YS).....	9YS	300, 375	P	X	University of Missouri.
Fayetteville, Ark.....	9YM	200, 400	P	X	University of Arkansas.
Richmond Hill, N. Y.....	2ZV	300, 3500	P	X	Alfred H. Grebe.
University Place, Nebr.....	9YD	300, 468	P	X	Nebraska Wesleyan University.
Westbrook, Me.....	1ZQ	200, 300, 425, 600	P	X	Wm. H. Rocheleau.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1ZQ 2ZV	First district: Westbrook, Me. Second district: Richmond Hill, N. Y.	9YD 9YM 9YS	Ninth district: University Place, Nebr. Fayetteville, Ark. Columbia, Mo. (9YS.)

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.

G. loc. =Geographical location: O=west longitude, N=north latitude.

Call =Call letters assigned.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths assigned: Normal wave lengths in italics.

Service=Nature of service maintained:

PG=General public.

PR=Limited public.

P=private.

O=Government business exclusively.

Hours =Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m. (12m=midday).

s=p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

OTHER ABBREVIATIONS.

Marconi Co.=Marconi Wireless Telegraph Co. of America.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

MOBILE, ALA.—System, Marconi, 400; W. L., 300, 445, 600.

TAMPA, FLA.—W. L., 300, 510, 600; hours, 7m-10s.

VICTOR, COLO.—W. L., 575.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ANCON.—W. L., strike out 500; Note, Radio station operated and controlled by Panama Railroad Co., owner of vessel.

ALASKA.—Range, 150; W. L., 300, 450, 525, 600; hours, X. Note, Radio station operated and controlled by Alaska Steamship Co., owner of vessel.

ARAFABOE.—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

AROLINE.—Range, 150; system, Marconi, 240. Note, Pacific-Alaska Navigation Co. owner of vessel.

- ARTISAN.**—Range, 250; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- BEAR.**—Range, 150.
- BRINDILLA.**—Range, 300; W. L., 300, 450, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- CAROLINA (KGB).**—W. L., 300, 450, 600.
- CAROLINIAN.**—(Name formerly *Southerner*); range, 150; system, Marconi, 240; hours, X. Notes, Radio station operated and controlled by Marconi Co. Export Leaf Tobacco Co., owner of vessel.
- CHARLES PRATT.**—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- CITY OF MACON.**—Name changed to *Macona*.
- EL MUNDO.**—System, Marconi, 480; hours, X; rates, North and South American service, 4 c. per word 40 c. per minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- GEORGIAN.**—System, Marconi, 480.
- GOVERNOR COBB.**—Range, 200; system, Marconi, 400; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- HARVARD.**—System, Haller-Cunningham, variable; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- HAVANA.**—W. L., 300, 450, 600.
- HERMOSA.**—Range, 150; system, Marconi, 120; W. L., 300, 500, 600; service, PR (limited to correspondence between East San Pedro and Avalon, Cal., and steamship *Cabrillo*); hours, X; rates, 1 c. per word 10 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- HURON.**—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- LARIMER.**—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- LURLINE.**—Range, 150; system, Marconi, 1,000; W. L., 300, 450, 600.
- LENAPE.**—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- MACONA.**—(Name formerly *City of Macon*); Note, Barber & Co. (Inc.), owner of vessel.
- MADISON.**—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- MASCOTTE.**—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Peninsular & Occidental Steamship Co., owner of vessel.
- MATSONIA.**—Range, 150; system, Marconi, 1,000; W. L., 300, 450, 600.
- MIAMI (KOZ).**—Range, 150; service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Peninsular & Occidental Steamship Co., owner of vessel.
- MUNWOOD.**—Range, 200; system, Marconi, 240; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Notes, Radio station operated and controlled by Marconi Co. Munson Steamship Co., owner of vessel.
- NEVADA.**—System, Marconi, 120.
- NORTH AMERICA.**—Strike out all particulars.
- OLSON & MAHONY.**—Name changed to *Providencia*.
- PLATURIA.**—Range, 200; system, Marconi, 240; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram.
- PRINCESS ANNE.**—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- PROVIDENCIA.**—(Name formerly *Olson & Mahony*); call WIK; range, 200; system, Composite, 375; W. L., 300, 600; service, PG, hours, X; rates 2 c. per word 20 c. minimum per radiogram. Notes, Radio station operated and controlled by Golden Gate Transport Co. Olson & Mahony, owner of vessel.

RAVALLI.—System, Marconi, 150; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service. 8 c. per word 80 c. minimum per radiogram.

RELAY.—Hours, X.

SARATOGA (KWS).—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service 4 c. per word 40 c. minimum per radiogram.

SIXAOLA.—System, Composite, 1,000.

SOUTHERNER.—Name changed to *Carolinian*.

S. O. Co. No. 91.—Range, 100; system, Marconi, 240.

S. O. Co. No. 93.—Range, 100; system, Marconi, 240.

WILLIAM CHATHAM.—Range, 500; system, Haller-Cunningham, variable; W. L., 300, 525, 600. Note, Radio station controlled by Steamer William Chatham Co., (Inc.), owner of vessel.

YALE.—System, Haller-Cunningham, variable; W. L., strike out 1,800; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram; transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all particulars following the call signal KRU.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

AUBURN, N. Y.—Hours, 9m-9.30m, 2s-2.30s, and on Monday, Wednesday, and Friday, 7s-7.30s.

COLUMBIA, Mo. (9XQ).—Radio station operated and controlled by University of Missouri (department of physics).

St. Louis, Mo. (9XY).—Call 9XY; W. L., 300, 750, 1,000.

SCHENECTADY, N. Y. (2XA).—W. L., 500, 800, variable.

MISCELLANEOUS.

ATLANTA RADIO CLUB.

The following letter which has been received by the Bureau is published in full because of the spirit of cooperation manifested therein:

COLLEGE PARK, GA.,
January 15, 1916.

DEAR SIR: I would like to give you a few facts about the Atlanta amateurs. As president of the Atlanta Radio Club, it is my duty to see that you do not get a mistaken impression of us.

I have one of the oldest stations in this section and have watched with much interest the increase of the number during the last two years. At first I could hear only one or two amateurs. The number commenced to grow, and soon interference became a problem. By this time most of us knew each other and, being congenial, we decided to band together and discuss our problems.

There were about 10 of us to start with. We secured the use of one of the small anterooms of the Carnegie Library Building and there held our first few meetings. The club grew rapidly. The small room was soon so crowded that we had to seek larger quarters. Several of our number who were members of the local Y. M. C. A. obtained permission to use a large room on the third floor of the 10-story building. We have held our meetings there on alternate Saturday nights since last summer. A temporary aerial has been erected on top of the building and we use it for receiving tests.

After our constitution was drafted we proceeded to draw up a set of operating rules. These rules consisted of the Government Radio Service regulations and a few which dealt with the local conditions. In addition to the usual club officers we elected a club radio inspector, whose duty it is to enforce these regulations. It is also his duty to visit each station once every 60 days for the purpose of suggesting improvements.

We decided that the objects of our club should be to promote interest in radio communication and to increase knowledge and operating efficiency. To promote

these objects, we have decided to rate each member according to the percentage he makes on competitive examinations to be held every three months. These examinations will be very similar to the Government examinations as given to operators. They will consist of questions on the radio laws and regulations, questions on the theory and operation of the apparatus, and an operating speed test. We believe that by creating a spirit of rivalry among the members the interest will be stimulated and operating efficiency increased.

We want you to understand that Atlanta is as alive "wirelessly" as she is in other respects. During "electrical prosperity week" last December we were invited to enter an exhibit in the electrical show. We realized that this was beyond the scope of the average wireless club, and quite an undertaking for so young an organization. However, after discussing the matter we decided that it would be beneficial both to ourselves and to the public at large. Luckily we were allotted a space right beneath a skylight. Some of our energetic and enterprising members obtained permission and erected an aerial on top of the 17-story building on the ground floor of which the show was held. Thus it was that we were able to have a station in actual operation in the exhibit. Several of the boys were always present to explain the mysteries of wireless to the eager spectators. Taken altogether, the venture was a glorious success. The Atlanta newspapers all gave us good writeups and we secured many new members.

The probable reason for the late start of wireless in this vicinity is that there are no Government or commercial stations within 250 miles of Atlanta. In order to hear anything at all the first amateurs had to have comparatively large aerials and very sensitive instruments. Until recently these instruments were beyond the reach of all but the wealthy experimenters. (It is a curious fact that I have noticed that rich amateurs are few and far between.)

As we are so far beyond the zone of interference, most of us use transmitting waves somewhat over the limit prescribed by the Government. We do this knowingly, but we feel that we are still obeying the spirit of the law, which is to prevent interference with Government and commercial stations. If we had the faintest idea that we were causing interference we would immediately cut down our waves. We will not allow any member to use power enough to reach the coast under any conditions unless he either uses a short wave or else has a special license.

As to our loyalty to the United States, we hope that we are not less loyal than the most patriotic citizen in the whole land. We are planning to put our loyalty into practical use. We expect in the near future to form a volunteer signal corps and to practice field work under as near actual war conditions as possible. In the meantime we can be depended upon to discover and report any unneutral or unfriendly station which might attempt operation in this vicinity.

Hoping this may be of service to you, I beg to remain,

Very truly, yours,

FRANCIS F. MERRIAM.

TAHITI RADIO STATION OPENED.

The radio station erected by the French Government at Haapape, or Mahina, near Venus Point, Island of Tahiti, was declared open to receive and transmit commercial messages on December 28, 1915.

Communication with the United States will be via Samoa, and Awanui, New Zealand, thence by cable to San Francisco. The rates have not yet been established nor has the station been assigned call letters. All messages during the time of the war (sent or received) must be in French, or if in English should be accompanied by the translation. A strict censorship is exercised and code messages are not accepted.

It is not expected that the cost per word to the United States via the route indicated above will be over \$1, and it is hoped that some arrangement may be made to transmit messages via Tutuila to Honolulu and thence to San Francisco. The all-wireless route just referred to would reduce the cost per word more than one-half and would insure a saving of time.

The present installation of 10 kilowatt, with a wave length of 600 meters, can easily maintain communication with Tutuila. After

the completion of the larger station of 300 kilowatt, with a wave length of 2,500 meters, direct communication with Honolulu will be easily maintained, and even San Francisco, Sydney, and the French West Indies are expected to be reached.

The official designation of the new station has not yet been decided. It has been suggested that it should be known as the Haapape, or the Mahina, or the Point Venus Radio Station, but it is expected that the minister of war, in establishing the rates, will officially bestow the name of the Tahiti Radio Station.

The station is situated at a point some 10 miles from Papeete, and a telegraph line has been stretched between it and the post office at Papeete and the postmaster will be in charge of all messages after they have undergone the scrutiny of the censor. The completion and operation of a wireless plant has placed this colony in direct communication with the rest of the world and the business houses are now no longer dependent on the monthly mail service.

PROPOSED WIRELESS-TELEPHONE INSTALLATION IN SPAIN.

In continuation of a report dated February 1, the consul at Seville, Spain, transmits information based on an article published in the Liberal of that city, giving further details of the proposed wireless-telephone installation at that place.

The proposal contemplates stations in all of the principal cities of Spain and the adjacent Spanish territory in Africa, the Balearic Islands, the Canary Islands, and the islands of Tenerife and the Grand Canaries, with apparatus installed on the various Spanish coasting and ocean vessels.

It is said that stations of the first class (having a power of 5 kilowatts) are to be installed in Seville, Cadiz, and Cordoba in this consular district, and at Madrid, Bilbao, Ciudad Real, Cuenca, Siguenza, Valladolid, Zaragoza, Logrona, Leon, Lugo, Granada, Lerida, Gijon, Coruna, Vigo, Malaga, Almeria, Alicante, Valencia, Barcelona, in other parts of Spain, and at Tangier, Mellilla, Palma de Mallorca, and Las Palmas in Spanish possessions, a total of 27 stations of the first class.

Stations of the second class (having a power of 2 kilowatts), six in all, are to be established at Huelva in this district, and at Larache, Ceuta, Ibiza, Ciudadela, and Tenerife.

The object of the stations is to transmit wireless-telephone messages (similar to the telephone messages now transmitted over the land lines in Spain), or when desired that parties may talk with either parties direct.

The first class, which are called "Radiotelefonemas" are to have a special tariff exactly the same as that now fixed for the land lines of Spain, with a rebate of one-half for deferred messages, and the same rebate on press messages.

In the second class, known as "Conferencias radiotelefonicas," the rates are to be for three minutes, or fraction thereof, according to distance:

Up to 100 kilometers, 0.75 peseta (approximately 15 cents).

From 100 to 200 kilometers, 1.25 pesetas.

From 201 to 300 kilometers 0.50 peseta additional, with an additional 50 centimos (approximately 10 cents) for each additional 100 kilometers.

For communication with vessels the tariff is to be 0.15 additional for each word of "Radiotelefonemas," without regard to distance. For "conferences" the price is to be computed by the land distance to the nearest station to the vessel, with an addition of 2 pesetas for each three minutes of conversation, without regard to the distance the message may be carried over the sea.

The stations of the first class are to be always open, and those of the second class from 8 in the morning until 10 at night.

CHARGING PANEL FOR STORAGE BATTERY FOR THE OPERATION OF EMERGENCY LIGHTS ON PASSENGER VESSELS.

In compliance with the regulations of the Steamboat-Inspection Service of the Department of Commerce, requiring auxiliary lights on passenger vessels, a number of such vessels at Baltimore, Md., have been equipped with emergency lights, using storage battery as the auxiliary source of power.

In order that the storage battery be properly charged, a charging panel board has been designed by Radio Inspector R. Y. Cadmus, of the Department of Commerce, which apparently meets these requirements. The board is so equipped as to automatically disconnect the charging circuit when the battery has been charged. Should the lights be used for purposes other than emergency, the sangamometer can be set so as to cut out these lights when the discharge reaches a certain point, thereby reserving the necessary emergency supply.

The board is equipped with overload and underload automatic switches, to prevent excessive charging or charging from reversed polarity.

The board is simple in construction and comparatively inexpensive.

In the event of an accident requiring the use of the lights, this is accomplished by the officer or wheelman on the bridge throwing one switch or pressing a push button on the steering head of the wheel.

The lights are placed in the main passageways, the passageways leading to the staterooms, over the doors leading to the decks, on the stairways leading to the lifeboat decks, on the boat deck in immediate vicinity of lifeboats and rafts, and to the signal lights of the vessel.

The above lights are arranged on three circuits, one for each deck, leading to the charging panel. These circuits consist of two parallel wires run through a lead cable, and the lamps connected in parallel or across the parallel wires; therefore, should one of the lamps get broken, the circuit is not interrupted. On the freight deck 3-ampere fuses are used; on the passenger deck 5-ampere fuses are used; and on the boat deck 10-ampere fuses are used. In the event of an accident, should the water reach the freight deck circuit, the 3-ampere fuses will blow, resulting in the lights on the decks above becoming more brilliant.

AMATEUR OPERATORS' LICENSES SUSPENDED.

The radio inspector, customhouse, Boston, Mass., has reported to the Bureau violations of the radio laws by amateurs in his district, resulting in the suspension of their license privilege by the Secretary of Commerce for periods of from one to three months:

Two at New Haven, Conn., reported for operating a radio station without a license for the station and without having an operator's license; licenses suspended for one month and two months, respectively.

One at Stoneham, Mass., reported for using profane and abusive language in transmitting messages; license suspended for three months.

The operators mentioned above have been notified that should they be reported for other violations of the radio laws, such leniency may not be shown them by the department.

AMATEUR PENALIZED.

An amateur radio operator at Stamford, Conn., has been indicted in the United States District Court at New Haven, Conn., for violation of sections 1, 2, and 3 of the act of August 13, 1912, entitled "An act to regulate radio communication."

The jury reported a verdict of guilty, charging the defendant with operating a radio station without a license for the station, and also without having an operator's license, and a penalty was imposed by Judge Thomas.

COMMERCIAL EXTRA FIRST-GRADE LICENSES.

During the months of February and March the Secretary of Commerce has issued commercial extra first-grade licenses to the following operators: Arthur Griffiths, William O'Connor, Fred Muller, and James B. Barriette.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, May, 1916—No. 17

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WASHINGTON, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	Range.	Wave lengths.	Service.	Hours.	Station controlled by—
Anchorage, Alaska ¹	NZY	.....	.....	.....	.....	Alaska Engineering Commission.
Chignik, Alaska ^{2,3}	KHC	200	300, 500 600, 1610	(12)	X	Alaska Packers' Association.
Clarks Point, Alaska ^{4,5} ..	KHG	200	300, 400, 500, 600	(12)	X	Do.
Koggiung, Alaska (KHB). ^{2,6}	KHB	200	300, 400, 500, 600	(12)	X	Do.
Koggiung, Alaska (KVV). ^{6,7}	KVV	100	300, 450, 600	(12)	X	Alaska Fishermen's Packing Co.
Larsen Bay, Alaska ^{2,8} ..	KHA	200	300, 500, 600, 1610	(12)	X	Alaska Packers' Association.
Naknek, Alaska (KHT). ^{4,9}	KHT	200	300, 500, 600, 1610	(12)	X	Do.
Port Moller, Alaska ¹⁰ ...	KWR	150	300, 450, 600, 1610	PG	(11)	Pacific-American Fisheries.
Snag Point, Alaska ^{2,12} ..	KHF	200	300, 400, 500, 600	(12)	X	Alaska Packers' Association.

¹ System, Kilbourne & Clark.

² Note, Radio station open from approximately April to October each year.

³ G. loc. (approximate), O 158° 31' 30", N. 56° 17' 30"; system, Kilbourne & Clark, 1,000. Note, Radio station communicates with United States naval station at Kodiak, Alaska, and Alaska Packers' Association stations at Larsen Bay and Naknek, Alaska.

⁴ G. loc. (approximate), O 158° 31' 30", N. 58° 50' 45"; system, Kilbourne & Clark, 120. Note, Radio station communicates with stations of the Alaska Packers' Association at Snag Point, Naknek, and Kvichak, Alaska, and vessels of the association.

⁵ G. loc. (approximate), O 157° 00' 00", N. 59° 02' 30"; system, Kilbourne & Clark, 120. Note, Radio station communicates with stations of the Alaska Packers' Association at Naknek, Snag Point, and Clarks Point, Alaska, and vessels of the association.

⁶ Station is in operation from approximately July 1 to Aug. 20.

⁷ G. loc. (approximate), O 156° 55' 00", N. 59° 00' 00"; system, Kilbourne & Clark, 120.

⁸ G. loc. (approximate), O 153° 59' 40", N. 57° 37' 30"; system, Kilbourne & Clark, 1,000. Note, Radio station communicates with stations of the Alaska Packers' Association at Chignik, and Naknek, Alaska, and with the United States naval station at Kodiak, Alaska.

⁹ G. loc. (approximate), O 157° 00' 00", N. 58° 43' 30"; system, Kilbourne & Clark, 1,000. Note, Radio station communicates with United States naval stations at Kodiak, St. Paul, and Dutch Harbor, Alaska, and the vessels and land stations of the Alaska Packers' Association.

¹⁰ G. loc. (approximate), O 160° 40' 00", N. 59° 50' 00"; system, Kilbourne & Clark, 1,000.

¹¹ Hours, 8.30 a. m. to 12 m., 1 to 5 p. m., and other hours when business warrants.

¹² G. loc. (approximate), O 158° 27' 15", N. 59° 02' 30"; system, Kilbourne & Clark, 120. Note, Radio station communicates with stations of the Alaska Packers' Association at Naknek, Clarks Point, and Kvichak, Alaska, and with vessels of the association.

¹³ Service, limited commercial.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
KGW	D. N. Luckenbach.....b	KSW	Royal Arrow.....b
KHA	Larsen Bay, Alaska.....c	KUG	Munplace.....b
KHB	Koggiung, Alaska, KHB.....c	KUK	Munsomo.....b
KHC	Chignik, Alaska.....c	KVV	Koggiung, Alaska, KVV.....c
KHF	Snag Point, Alaska.....c	KWR	Port Moller, Alaska.....c
KHG	Clarks Point, Alaska.....c	NZX	L. Roscoe.....b
KHT	Naknek, Alaska, KHT.....c	NZY	Anchorage, Alaska.....c
KIJ	Acme.....b	WBH	Colombia.....b
KIQ	Astral.....b	WCU	Conneaut.....b
KNS	Sucrosa.....b	WCV	The Limit.....b
KNT	Mielero.....b	WDH	Petoskey.....b
KNV	Cubadist.....b	WUW	Anne W.....b
KPK	Starlite.....b	WOL	Los Angeles.....b
KPL	Moonlite.....b	WRP ¹	Dauntless.....b
KPO	Twillite.....b	WRP ¹	Defiance.....b
KPP	Dawnlite.....b	WRP ¹	Fearless.....b
KPQ	Sunlite.....b	WRP ¹	Hercules.....b
KPR	Daylite.....b	WRP ¹	Sea Rover.....b
KSV	Standard Arrow.....b	WSU	Republic.....b

¹ This call is interchangeable among the following tugs (one set of apparatus only being used): Dauntless, Defiance, Fearless, Hercules, and Sea Rover.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Owner of vessel.
Acme ^{1, 2, 3}	KIJ	Marconi	300, 450, 600	Standard Transportation Co.
Astral ^{1, 2, 3}	KIQ	do.	300, 450, 600	Do.
Anne W.	WMU	do.	300, 600	Hosford Transportation Co.
Colombia	WBH	do.	300, 600	Pacific Mail Steamship Co.
Conneaut ^{2, 4}	WCU	do.	300, 600	Wyandotte Transportation Co.
Cubadist ^{2, 3}	KNV	do.	300, 600	Cuba Distilling Co.
Dauntless ^{1, 5}	WRP ⁶	Haller-Cunningham impulse excited. ¹³	300, 600	Ship Owners & Merchants' Tugboat Co.
Dawnlite	KPP	Marconi	300, 600	Standard Oil Co. of New Jersey.
Daylite	KPR	do.	300, 600	Do.
Defiance ^{1, 7}	WRP ⁶	Haller-Cunningham impulse excited. ¹³	300, 600	Ship Owners & Merchants' Tugboat Co.
D. N. Luckenbach ^{2, 8}	KGW	Marconi	300, 600	Edgar F. Luckenbach.
Fearless ^{1, 9}	WRP ⁶	Haller-Cunningham impulse excited. ¹³	300, 600	Ship Owners & Merchants' Tugboat Co.
Hercules ^{1, 9}	WRP ⁶	do.	300, 600	Do.
Los Angeles ^{1, 2, 10}	WOL	Federal Poulsen Arc, 300.	300, 600 1800	Federal Telegraph Co.
L. Roscoe	NZX	Kilbourne & Clark		Alaskan Engineering Commission.
Mielero ^{2, 3}	KNT	Marconi	300, 600	Cuba Distilling Co.
Moonlite	KPL	do.	300, 600	Standard Oil Co. of New Jersey.
Munplace ^{1, 2, 3}	KUG	do.	300, 600	Munson Steamship Co.
Munsomo ^{1, 2, 3}	KUK	do.	300, 600	Do.
Petoskey ^{2, 11}	WDH	do.	300, 600	Chicago & South Haven Steamship Co.
Republic	WSU			John A. Hooper.
Royal Arrow ^{1, 2, 3}	KSW	Marconi	300, 450, 600	Standard Transportation Co.
Sea Rover ^{1, 12}	WRP ⁶	Haller-Cunningham impulse excited. ¹³	300, 600	Ship Owners & Merchants' Tugboat Co.
Sucrosa ^{2, 3}	KNS	Marconi	300, 600	Cuba Distilling Co.
Standard Arrow ^{1, 2, 3}	KSV	do.	300, 450, 600	Standard Transportation Co.
Starlite	KPK	do.	300, 600	Standard Oil Co. of New Jersey.
Sunlite	KPQ	do.	300, 600	Do.
The Limit	WCV	do.		Whitney Bros. Co.
Twilite	KPO	do.	300, 600	Standard Oil Co. of New Jersey.

¹ Service, PG.

² Note, Radio station operated and controlled by Marconi Co.

³ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

⁴ Rates, 2 c. per word 20 c. minimum per radiogram.

⁵ Range, 100; hours, X; rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Ship Owners & Merchants' Tugboat Co., owner of vessel.

⁶ This call is interchangeable among the following tugs (one set of apparatus only being used): Dauntless, Fearless, Defiance, Hercules, and Sea Rover.

⁷ Range, 100; hours, X; rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Ship Owners & Merchants' Tugboat Co., owner of vessel.

⁸ Range, 100; hours, X; rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Ship Owners & Merchants' Tugboat Co., owner of vessel.

⁹ Range, 100; hours, X; rates 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Ship Owners & Merchants' Tugboat Co., owner of vessel.

¹⁰ Range, 200; hours, X. Note, Radio station operated and controlled by Federal Telegraph Co.

¹¹ Rates, 2 c. per word 20 c. minimum per radiogram.

¹² Range, 100; hours, X; rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Ship Owners & Merchants' Tugboat Co., owner of vessel.

¹³ Sparks per second, variable.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Bozeman, Mont	7ZD	200, 425	P	X	R. Earl Dawes.
Indianapolis, Ind.	9YK	200, 450	P	X	James E. Weyant.
Lacey, Wash.	7YS	300, 450, 800 ..	P	X	St. Martin's College.
Little Rock, Ark. (5XF) ..	5XF	Variable	P	X	Arthur R. McCreary.
Media, Pa.	3X	300, 400, 800 ..	P	X	Simon Delbert, jr.
Oxford, Ohio.	8YR	200, 425	P	X	Miami University.
Philadelphia, Pa. (3XP) ..	3XP	300, 400, 800 ..	P	X	Simon Delbert, jr.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
3XO	Third district:	7YS	Seventh district:
3XP	Media, Pa.	7ZD	Lacey, Wash.
5XF	Philadelphia, Pa. (3XP).	8YR	Bozeman, Mont.
	Fifth district: Little Rock, Ark. (5XF).	9YK	Eighth district: Oxford, Ohio.
			Ninth district: Indianapolis, Ind.

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.

G. loc. =Geographical location: O=west longitude, N=north latitude.

Call =Call letters assigned.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths assigned: Normal wave lengths in italics.

Service=Nature of service maintained:

PG=General public.

PR=Limited public.

P=private.

O=Government business exclusively.

Hours =Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m. (12m=midday).

s=p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

OTHER ABBREVIATIONS.

Marconi Co.=Marconi Wireless Telegraph Co. of America.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- CHIGNIK, ALASKA.—Strike out all particulars.
- CLARKS POINT, ALASKA.—Strike out all particulars.
- DENVER, COLO.—W. L., 300, 575; service, limited commercial; hours, X. Note, This station limited to communication with the following stations: Ajax Gold Mining Co., Victor, Colo., and H. C. Colburn, Colorado Springs, Colo.
- FORT MORGAN, ALA. (WFM).—Range, 200; system, Marconi, 400; W. L., 300, 445, 600. Note, In addition to hours previously published, station is also in operation from 9.40 a. m. to 9.50 a. m., daily.
- KARLUK, ALASKA.—Strike out all particulars.
- KOGGIUNG, ALASKA.—Strike out all particulars.
- NAKNEK, ALASKA (KHT).—Strike out all particulars.
- NUBHAGAK, ALASKA (KHF).—Strike out all particulars.
- PASSAGRILLE, FLA.—G., loc. (approximate), $0^{\circ} 82' 44'' 16''$, N. $27^{\circ} 40' 53''$; range, 50; system, composite, 250; W. L., 300, 435, 600; service, PG; hours, X (this station also communicates with a land station (WIX) at St. Petersburg, Fla., the hours of operation being as follows: 8m–11m, 1s–5s, 7.30s–8s); rates, for communication with ships (cable count) per word 4 c. minimum per radiogram of 15 words 60 c., for communication with St. Petersburg, Fla. (not cable count), 10-word day message 35 c., additional words 2 c. each, 10-word night message 25 c., additional words 1 c. each, 50-word day letter 53 c., each additional 10 words or less one-fifth of initial rate, 50-word night letter 35 c., each additional 10 words or less one-fifth of initial rate.
- PHOENIX, ARIZ.—Range, 300; system, Federal Poulsen arc; W. L., 3,000, 3,400; service, limited commercial; hours, 6m–6s, local standard time; rates, per radiogram of 15 words 50 c., additional words 3 c. each (domestic count). Note, This station is limited to communication with the Federal Telegraph Co.'s station at Los Angeles (KEX), Cal.
- ST. PETERSBURG, FLA.—System, composite, 500; W. L., 300, 395, 600; service, limited commercial; hours, 8m–11m, 1s–5s, 7.30s–8s; rates (not cable count), 10-word day message 35 c., additional words 2 c. each, 10-word night message 25 c., additional words 1 c. each, 50-word day letter 53 c., each additional 10 words or less one-fifth of initial rate, 50-word night letter 35 c., each additional 10 words or less one-fifth of initial rate. Note, This station limited to correspondence with a land station (WRG) at Passagville, Fla.
- TAMPA, FLA.—W. L., 300, 510, 600; hours, 6m–8m, 10m–1s, 4s–7s (time of the meridian 90° west of Greenwich).

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- ARBOREAN.—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- ARDMORE.—System, Marconi.
- BALBOA.—Strike out all particulars.
- BARGE No. 1.—Name changed to *Inco No. 1*.
- BUCCANEER.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- CHESTER W. CHAPIN.—System, Fessenden, 260; W. L., 300, 550, 600.
- CONCHO.—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- CONCORD.—System, Fessenden, 260; W. L., 300, 550, 600.
- CONSTABLE HOOK.—(Name formerly *Henry Williams*); rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.

- CURACAO.**—System, Marconi; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- DADE.**—Note, Radio station operated and controlled by Marconi Co.
- DIANA.**—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- ECUADOR.**—System, Marconi; W. L., 300, 600.
- EL OCCIDENTE.**—System, Marconi, 400; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- EL ORIENTE.**—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- EL SOL.**—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- EL SUD.**—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- FRED'K. LUCKENBACH.**—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- GALATEA.**—Rates, 2 c. per word 20 c. minimum per radiogram.
- GARGOYLE.**—Range, 200; W. L., 300, 450, 600.
- GREAT NORTHERN.**—W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- HENRY WILLIAMS.**—Name changed to *Constable Hook*.
- HEWITT.**—(Name formerly *Pacific, KTL*). Note, Radio station operated and controlled by Union Sulphur Co., owner of vessel.
- H. H. ROGERS.**—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- ILLINOIS (KTH).**—System, Marconi, 1,000; W. L., 300, 450, 600.
- INCO No. 1.**—Name formerly *Barge No. 1*. Rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- IROQUOIS (KVF).**—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- J. A. CHANSLOR.**—System, Federal Poulsen arc. Note, Radio station operated and controlled by Federal Telegraph Co.
- JOHN A. HOOPER.**—System, Marconi, 480.
- LA BREA.**—Range, 300; W. L., 300, 600, 1,800.
- LAKEPORT.**—Rates, 2 c. per word 20 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- LAKEWOOD.**—Rates, 2 c. per word 20 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- LEXINGTON (KNB).**—W. L., 300, 550, 600.
- MAHOA.**—System, Marconi, 1,000; W. L., 300, 450, 600.
- MASCOTTE.**—Range, 150; hours, N; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- MATINICOCK.**—System, Marconi; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- MEDINA.**—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- MIAMI (KOZ).**—Hours, N; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- NECHES.** Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

- NEVADA.—System, Marconi, 480; W. L., 300, 600. Note, Radio station operated and controlled by Marconi Co.
- NEW HAMPSHIRE (KXF).—System, Fessenden, 260; W. L., 300, 550, 600.
- NEW HAVEN (KXN).—System, Fessenden, 260; W. L., 300, 550, 600.
- NEW YORK (KUW).—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- NORTHERN PACIFIC.—Range, 150; W. L., 300, 465, 600.
- PACIFIC (KIL).—Name changed to *Hewitt*.
- PEARL SHELL.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. per radiogram. Note, Radio station operated and controlled by Marconi Co.
- REMLIK.—Note, Radio station operated and controlled by Willis S. Kilmer, owner of vessel.
- SANTA CATALINA.—Range, 200.
- SANTA CECILIA.—Range, 200.
- SANTA CRUZ (WPA).—Strike out all the particulars.
- SANTIAGO.—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; hours, N.
- SENATOR BAILEY.—System, Composite, 1,000; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Notes, Radio station operated and controlled by Marconi Co.; Gulf Refining Co., owner of vessel.
- STANDARD.—System, Marconi.
- SURUGA.—Call, KGD; range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- TORMENTER.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- VENEZUELA.—System, Marconi; W. L., 300, 600.
- VIRGINIA (KFR).—Note, Gaston, Williams & Wigmore Steamship Corporation, owner of vessel.
- WESTWEGO.—System, Marconi, 1,000; W. L., 300, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- YAGUEZ.—W. L., 300, 450, 600.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all the particulars following the call signals: KHA, KHB, KHC, KHF, KHG, KHT, and WHU.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

- ALAMEDA, CAL.—Strike out all the particulars.
- BURLINGTON, IOWA.—Note, Radio station operated and controlled by William W. Peters (Burlington High School).
- CHICAGO, ILL.—Strike out all the particulars.
- HARTFORD, CONN. (1ZT).—W. L., 200, 300, 425, 600; hours, X.
- NORWALK, OHIO.—Strike out all the particulars.
- OVERLIN, OHIO.—Strike out all the particulars.

SPECIAL LAND STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all the particulars following the call signals: 6XS, 8ZI, 8ZO, and 9YH.

MISCELLANEOUS.**CHILEAN WIRELESS SERVICE.**

In view of the fact that the press has lately spoken of opening the Chilean radiotelegraphic stations for commercial use, information was requested of the Director General of Telegraphs by the commercial attaché at Santiago as to the actual state of affairs. Under date of March 2 he replied:

The radiotelegraph stations have not been opened for public service because there are some which are not yet connected with the land lines and are also lacking in certain details which will be necessary for putting them into service. This office will advise you as soon as they are opened for use. I am sending you herewith a copy of the proposed tariff and other information which you have indicated a desire to know.

A translation of portions of the decree opening the wireless stations of Chile to public service, to which the director general refers in the above note, is as follows:

Whereas, there have been established in the country several radiotelegraphic stations and some of them are united to the land lines of the State Telegraph; and

Whereas, it would appear that these offices should be utilized by the public and in view of the facts presented by the Director General of Telegraphs, acting in accordance with the Director General of the Navy.

I decree that the Director General of Telegraphs shall take charge of the telegraphic service of the radiotelegraph stations and all details relating to the public service, collection of tariffs, and the relations which this country may have with other countries or administrations. The Navy will have charge in future of everything connected with the personnel, apparatus, and actual service of the radiotelegraphic stations.

Second. The radiotelegraphic offices will be opened to the public service from time to time, as the Director General of Telegraphs may announce, beginning with the offices which are now connected with the existing land lines.

The respective charges in the service of wireless interchange, in accordance with the international convention, will be:

- (a) To a coast station, 60 centimes of a franc (11.58 cents U. S.).
- (b) To a station on board a ship, 40 centimes (7.72 cents).
- (c) Land service, 10 centimes (1.93 cents).
- (d) Intermediary transit charges from coast or ship stations, and charges fixed for any special services requested by sender.

Fourth. In making collections for aerograms from the offices of the State Telegraphs, the following rates will be charged:

(a) Aerograms sent to ships via station on the Chilean coast, 5.50 gold pesos (\$2 U. S.) for the first 10 words and 0.55 gold peso (\$0.20) for each additional word.

(b) For radiotelegraphic exchange between the coast offices which are on the Chilean coast, 4 Chilean paper pesos (fluctuating value, \$0.15 to \$0.18) for the first 10 words, and 40 centavos Chilean paper currency for each additional word.

(c) For the radio telegrams which are sent to any offices of the State Telegraph land lines from Chilean ships of war by the personnel of these warships, whether officials or members of the crew, 2 paper pesos for the first 10 words and 20 centavos for each additional word.

(d) If it is necessary for a radiotelegram to pass over lines or stations of other administrations or companies, there will be collected in addition to the rates mentioned the charges corresponding to such lines or stations.

(e) Radio telegrams for the press will be given the advantage of a discount of 50 per cent of the indicated tariffs, provided they comply with the respective regulations.

Fifth. For the present there will not be admitted to the radiotelegraphic service any special service with the exception of the radiotelegrams for the press.

Sixth. There will be no franks recognized in connection with the radiotelegraphic service except on messages sent by His Excellency the President of the Republic and official messages sent by the Secretary of State, the superior officers of the Navy, commanders of Chilean ships of war, and the Director General of Telegraphs.

All funds received by the offices of the State Telegraphs in payment for radiograms will be paid into the respective fiscal treasuries for the account of the State Telegraph combined service, and these fiscal treasuries will credit these funds to the respective

department accounts maintained by the fiscal treasurer in Santiago. There will be credited to the same account by the Director General of Telegraphs, the balances received from other countries and other administrations for the value of radiotelegrams. The payment of the balances due other countries or administrations for the account of radiotelegrams will be made from this same fund, which may be drawn upon for this purpose by the Director General of Telegraphs.

Eighth. For the present, and until other instructions are issued, the international regulations appended to the radiotelegraphic convention, which was subscribed to in London in July, 1912, will be followed.

COMMERCIAL EXTRA FIRST-GRADE LICENSES FOR OPERATORS ON UNITED FRUIT CO. SHIPS.

Under date of January 26, 1916, the Tropical Radio Telegraph Co. issued the following circular pointing out to operators on United Fruit Co. ships the desirability of securing commercial extra first-grade licenses:

TO ALL OPERATORS:

Ship operators are again reminded that it is highly desirable to hold the extra first-grade commercial operators' licenses issued by the Department of Commerce. The possession of such a license is a distinct mark of ability, and in considering men for promotion to positions as chief operators on board ship, as well as trick operators at shore stations, those holding an extra grade license will be given preference regardless of their length of service.

In general, it should be the aim of every radio operator on board a United Fruit Co. ship to hold an extra grade license.

Operators who obtain an extra grade license should notify the general office promptly, giving the license number and date issued.

Yours very truly,

GEO. S. DAVIS,
General Superintendent.

The commercial extra first-grade license is the highest class of license, and is issued by the Department of Commerce to radio operators who pass a special examination demonstrating unusual experience and skill. These licenses are given consideration by the Civil Service Commission in examinations for positions requiring knowledge of radiotelegraphy when experience is rated as a part of such examinations. To be eligible for the examination for the commercial extra first-grade license applicants must hold commercial first-grade licenses, and their certificates of skill in radio communication, issued under the act of June 24, 1910, or licenses under the act of August 13, 1912, must record 18 months' satisfactory commercial service at sea or at land stations, either or both, during the two years previous to the filing of the application for examination, as shown by indorsement on the license service records, or other satisfactory evidence, and provided that the applicants have not been penalized for a violation of the radio laws and regulations.

A speed of at least 30 words per minute, Continental Morse, and 25 words per minute, American Morse (five letters to the word), must be attained. The technical questions and the questions of the radio laws and regulations will be considerably wider in scope than those for commercial first grade, and a higher percentage will be required.

All examination papers, including the code test sheets, are marked and forwarded to the Commissioner of Navigation with a recommendation by the radio inspector or examining officer. Examination papers are marked upon the basis of 100, and licenses are recommended only if 80 or better is attained.

Licenses of this grade are issued by the Commissioner of Navigation, indorsed by the Secretary of Commerce, and delivered to the successful applicant through the examining officer.

UTILIZATION OF WIRELESS FOR TRANSMISSION OF WEATHER OBSERVATIONS.

At the request of the Weather Bureau arrangements have been made by the United States Bureau of Lighthouses for taking weather observations on the light vessels at Nantucket Shoals, Mass.; Diamond Shoals, N. C.; Frying Pan Shoals, N. C.; and Heald Bank, Tex. These light vessels are all equipped with radio, by means of which observations may be transmitted to any point desired.

LOS ANGELES AMATEURS FINED FOR RADIO VIOLATIONS.

On March 23, 1916, four amateurs, all residents of Los Angeles, Cal., appeared before Judge Oscar A. Trippet, of the United States District Court, and entered pleas of guilty to Federal indictments returned last December, charging them with operating radio stations without first having obtained licenses from the Government. Fines were imposed by Judge Trippet and the offenders were admonished to be more cautious in future.

The trial of two other amateurs, who pleaded not guilty, has been set for next July.

The maximum penalty for the above violation is a fine of \$100 and imprisonment for a period of two months.

BOSTON AMATEUR PENALIZED.

On April 19, 1916, the radio inspector at Boston, Mass., reported an amateur in his district for violation of sections 1, 3, and 7 of the act of August 13, 1912. The case was referred to the United States district attorney for prosecution. A verdict of guilty was rendered in the district court and a fine imposed.

The maximum penalty for the above violation is a fine of \$500 and confiscation of the apparatus unlawfully used.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, June, 1916—No. 18

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WASHINGTON, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	Range.	Wave length.	Service.	Hours.	Station controlled by—
Conneaut Harbor, Ohio. ¹	WEV	200	300, 475, 540, 600	PR	X	Marquette & Bessemer Dock & Navigation Co.
Davenport, Iowa. ²	WPT	300	500	(3)	X	Western Flour Mill Co. (International Milling Co.).
New Prague, Minn. ³ ...	WPU	300	500	(3)	X	New Prague Flouring Mill Co. (International Milling Co.).

¹ G. loc., approximate, O 80° 36' 00", N. 41° 57' 00"; system, Kilbourne & Clark, 240; rates, 3 c. per word 30 c. minimum per radiogram. Note, The station is restricted to communication with the vessels *Marquette & Bessemer No. 1* and *Marquette and Bessemer No. 2*.

² G. loc., approximate, O 90° 35' 10", N. 41° 31' 26"; system, Marconi.

³ Service, limited commercial. Note, The station communicates with stations of the International Milling Co. on business of the company.

⁴ G. loc., approximate, O 93° 31' 12", N. 44° 32' 39"; system, Marconi.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave length.	Owner of vessel.
Bayamon.....	KDX	Marconi.....	300, 600	Vacuum Oil Co.
Henry J. Biddle.....	WOW	Kilbourne & Clark	300, 600	Columbia Contract Co.
Bramell Point.....	KRO	Marconi.....	300, 600	Vacuum Oil Co.
Campana ¹	KOM	Marconi, 1,000.....	300, 450, 600	Standard Oil Co. of New Jersey.
Edgar F. Luckenbach ²	KGK	Kilbourne & Clark, 1,000.	300, 450, 530, 600	Luckenbach Co. (Inc.).
Gov. Forbes ³	WJA	Halcum, variable.	300, 600	Ynchanti Co.
Harry Luckenbach ⁴	KGX	Marconi, 1,000.....	300, 450, 600	Edgar F. Luckenbach.
Hiram B. Everest.....	KRS	Marconi.....	300, 600	Vacuum Oil Co.
Mooremack.....	WCL	.....do.....	300, 600	Moore & McCormick Co. (Inc.).
Navahoe ⁵	KOR	.....do.....	300, 600	R. Lawrence Smith (Inc.).
El Capitan (name formerly Oliver J. Olsen). ⁶	WNB	Marconi, 480.....	300, 600	Standard Oil Co. of New Jersey.
Samson.....	WOS	Kilbourne & Clark	300, 600	Columbia Contract Co.
Vigilant ⁷	KPG	Marconi.....	300, 600	Clinchfield Navigation Co.

¹ Range, 200; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.

² Range, 250; service, PG; hours, X; rates, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Luckenbach Co. (Inc.), owner of vessel.

³ Range, 200; service, PG; hours, N; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Ynchanti Co., owner of vessel.

⁴ Range, 200; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.

⁵ Note, Radio station operated and controlled by Marconi Co.

⁶ Range, 200; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.

⁷ Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
KDX	Bayamon.....b	WCL	Mooremack.....b
KGK	Edgar F. Luckenbach.....b	WEV	Conneaut Harbor, Ohio.....c
KGX	Harry Luckenbach.....b	WJA	Gov. Forbes.....b
KOM	Campana.....b	WNB	El Capitan.....b
KOR	Navahoe.....b	WOS	Samson.....b
KPG	Vigilant.....b	WOW	Henry J. Biddle.....b
KRO	Bramell Point.....b	WPT	Davenport, Iowa.....c
KRS	Hiram B. Everest.....b	WPC	New Prague, Minn.....c

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

Station.	Call signal.	Wave length.	Service.	Hours.	Station controlled by—
Cambridge, Mass. (1XU).....	1XU	600, Variable.	P	X	Cutting & Washington (Inc.).
Cleveland, Tenn.....	5ZH	425	P	X	W. O. Horner.
Denver, Colo. (9ZF).....	9ZF	425, 550, 800	P	X	Company A, Signal Corps, National Guard of Colo- rado.
Elmira, N. Y.....	8ZE	200, 425	P	X	Harry E. Fitch.
Ithaca, N. Y. (8XT).....	8XT	Variable.	P	X	Cornell University.
Oil City, Pa.....	8YW	200, 450	P	X	Clarence M. Wickes.
Pittsburgh, Pa. (8YZ).....	8YZ	200, 450	P	X	Charles C. Dunning (Pea- body High School).
Shreveport, La.....	5ZS	200, 425	P	X	Willie E. Antony.
Springfield, Mass.....	1ZS	200, 300, 425, 600.	P	X	George U. Readio.

SPECIAL LAND STATIONS GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1XU	First district:	8XT	Eighth district:
•1ZS	Cambridge, Mass. (1XU).	8YW	Ithaca, N. Y. (8XT).
	Springfield, Mass.	8YZ	Oil City, Pa.
5ZH	Fifth district:	8ZE	Pittsburgh, Pa. (8YZ).
5ZS	Cleveland, Tenn.	9ZF	Elmira, N. Y.
	Shreveport, La.		Ninth district: Denver, Colo. (9ZF).

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.

G. loc. =Geographical location: O=west longitude, N=north latitude.

Call =Call letters assigned.

System=Radio system used and sparks per second.

Range=Normal range in nautical miles.

W. L. =Wave lengths assigned: Normal wave lengths in italics.

Service=Nature of service maintained:

PG=General public.

PR=limited public.

P=private.

O=Government business exclusively.

Hours =Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m. (12m=midday).

s=p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

OTHER ABBREVIATIONS.

Marconi Co.=Marconi Wireless Telegraph Co. of America.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

AKUTAN, ALEUTIAN ISLANDS, ALASKA.—Range, 50; system, composite, 500; W. L., 300, 525, 600; service, limited commercial. Note, The station is restricted to correspondence of a private nature with the United States naval station at Dutch Harbor, Alaska.

ANCHORAGE, ALASKA.—G. loc., approximate, O 149° 50' 00'', N. 61° 16' 00''; range, 150; system, Kilbourne & Clark, 1,000; W. L., 300, 600, 750, 1,000; service, O; hours, X.

ASTORIA, OREG.—G. loc., approximate, O 123° 51' 00'', N. 46° 11' 00''; range, 300; W. L., 300, 600. Strike out the following note: The long wave lengths are used for limited public service with Ketchikan, Alaska; rates, for commercial business, \$1.25 for 10 words (10 word minimum) and 12 c. for each additional word, domestic count. For press despatches, 3 c. per word.

BROOKLYN, N. Y.—Range, 500; system, Fessenden, 1,000; W. L., 300, 550, 600, 1,650, 2,000; hours, 4m-8m; 5s-9s, time of the meridian 75° west of Greenwich. Note, Radio station operated and controlled by National Electric Signaling Co.

FORT MILLS, CORREGIDOR ISLAND, MANILA BAY, P. I.—G. loc., E 120° 34' 40''. N. 14° 22' 52''; Range, 35; system, U. S. Army, 1,000; W. L., 600, 825. Note, Radio station operated and controlled by United States War Department.

HILLCREST, DALY CITY, CAL.—System, Marconi, 520.

JUALIN, ALASKA.—W. L., 300, 500, 600, 1,980; service, PG; hours, 8.30m-8.45m; 1.30s-1.45s; 7.30s-7.45s; rates, PG service with ships, 6 c. per word 60 c. minimum per radiogram. Note, The station also conducts private correspondence with the Marconi station at Juneau, Alaska.

KAUNAKAKAI, ISLAND OF MOLOKAI, T. H.¹—Range, 30; W. L., 300, 450, 600; hours, 7m-12m; 1s-5:30s. Note, The station is restricted to communication with Lahaina.

KAWAIHAE, ISLAND OF HAWAII, T. H.¹—W. L., 300, 575, 600; service, limited commercial; hours, 7m-12m; 1s-5:30s. Note, The station is restricted to communication with Wahiawa, Lahaina, and Lihue.

LAHAINA, ISLAND OF MAUI, T. H.¹—W. L., 300, 575, 600; service, limited commercial; hours, 7m-12m; 1s-5:30s. Note, The station is restricted to communication with Wahiawa, Kawaihae, Kaunakakai, and Lihue.

LIHUE, ISLAND OF KAUAI, T. H.¹—System, Marconi, 565; W. L., 300, 575, 600; service, limited commercial; hours, 7m-12m; 1s-5:30s. Note, The station is restricted to communication with Wahiawa, Kawaihae, and Lahaina.

¹ Rates for interisland messages: Ordinary messages, per word, 15 c.; minimum charge, \$1.50; address and signature counted; press messages, per word, 7½ c.; minimum charge, \$1; address and signature counted; cipher or code messages, origin and destination Hawaiian Islands, per word 50 c.; minimum charge, \$1.50; address and signature counted. Cablegrams or trans-Pacific wireless messages in cipher, code, foreign, or English will be accepted and forwarded at ordinary rates plus the forwarding charges of the cable or wireless company, when such messages are to be delivered to them for forwarding; no minimum charge to apply. Double-rush messages will be charged for at double rate. Messages filed in other than English will be charged for at the code rate. A night letter of 25 words, including address and signature, from any point in the Hawaiian Islands to any other point in the Hawaiian Islands, \$1.50; each additional word above twenty-five, 5 c.

- NAKENEK, ALASKA (KMK).**—System, Composite, 400; W. L., 300, 500, 600; service, limited commercial. Note, The station is limited to correspondence with stations of the Red Salmon Canning Co., and the U. S. naval stations at St. George and St. Paul (Pribilof Islands) and Kodiak, Alaska.
- PORT ARTHUR, TEX.**—Hours, 6:30m–12m; 12:30s–6s; 6:30s–8:30s.
- ROCHE HARBOR, WASH.**—W. L., 300, 600, 1,800.
- SAYVILLE, L. I.**—G. loc., 73° 06' 12", N. 40° 14' 46"; range, 4,500; W. L., 3,900, 4,700, 5,200, 6,300, 7,800, 9,400; rates, transoceanic service, 25 c. per word. Notes, Radio station temporarily operated and controlled by United States Naval Radio Service, Radio, Va.; accounts handled by Atlantic Communication Co., 47 West Street, New York, N. Y. The station communicates with Nauen, Germany.
- TUCKERTON, N. J.**—Range, 4,000; system, Goldschmidt and arc; W. L., 8,600; service, PR; hours, N; rates, transoceanic service, 25 c. per word. Notes, Radio station temporarily operated and controlled by United States Naval Radio Service, Radio, Va. The station communicates with Eilvese, Germany.
- UGASHIK, ALASKA.**—W. L., 300, 500, 600; service, limited commercial. Note, The station is limited to correspondence with station of the Naknek Packing Co., Naknek, Alaska (KMK).
- WAHIAWA, ISLAND OF OAHU, T. H.^{1,2}**—O. 158° 02' 37", N. 21° 29' 28"; W. L., 300, 575, 600; service, PG; hours, PG service continuous; special interisland service, 7m–12m; 1s–5:50s. Note, The station also conducts special service, communicating with Kawaihae, Lahaina, and Lihue (Hawaii), Apia (Samoa), and Papeete (Tahiti).

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- ACUSHNET.**—W. L., 300, 600.
- ADELINE SMITH.**—Range, 150; system, Marconi, 480.
- ALOHA.**—Note, Radio station operated and controlled by Arthur Curtiss James, owner of vessel.
- AMAZONIA.**—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X.
- AROLINE.**—System, Marconi, 480.
- ATLAS (WTT).**—System, Marconi, 1,000; W. L., 300, 450, 600. Note, Standard Oil Co. of California, owner of vessel.
- BAY STATE.**—Range, 200; system, Marconi, 480.
- BEAR (WWD).**—Range, 150.
- BERLIN.**—System, Marconi, 400.
- BOSTON.**—System, Fessenden, 260; W. L., 300, 550, 600.
- BRADFORD.**—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- BREAKWATER.**—Range, 150; system, Marconi, 400; hours, N. Note, Southern Pacific Co., owner of vessel.
- C. A. CANFIELD.**—Range, 100; system, Marconi, 300; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

¹ Rates for interisland messages: Ordinary messages, per word, 15 c.; minimum charge, \$1.50; address and signature counted; press messages, per word, 7½ c.; minimum charge, \$1; address and signature counted; cipher or code messages, origin and destination Hawaiian Islands, per word 50 c.; minimum charge, \$1.50; address and signature counted. Cablegrams or trans-Pacific wireless messages in cipher, code, foreign, or English will be accepted and forwarded at ordinary rates plus the forwarding charges of the cable or wireless company, when such messages are to be delivered to them for forwarding; no minimum charge to apply. Double-rush messages will be charged for at double rate. Messages filed in other than English will be charged for at a code rate. A night letter of 25 words, including address and signature, from any point in the Hawaiian Islands to any other point in the Hawaiian Islands, \$1.50; each additional word above twenty-five, 5 c.

² Rate to Apia and Papeete, 50 c. per word; no minimum.

- CADDO.—System, Marconi, 1,000; W. L., 300, 450, 600; hours, X. Note, Radio station operated and controlled by Marconi Co.
- CAPTAIN A. F. LUCAS.—Range, 150; system, Marconi; W. L., 300, 450, 600.
- CAPTAIN A. M. WETHERILL.—System, United States Army, 1,000; W. L., 400; hours, X. Note, Radio station operated and controlled by United States War Department, owner of vessel.
- CAPTAIN BARRETT.—System, United States Army, 1,000; W. L., 400; hours, X. Note, Radio station operated and controlled by United States War Department, owner of vessel.
- CAPTAIN CHAS. W. ROWELL.—System, United States Army, 1,000; W. L., 400; hours, X. Note, Radio station operated and controlled by United States War Department, owner of vessel.
- CAPTAIN JAMES FORNANCE.—System, United States Army, 1,000; W. L., 400; hours, X. Note, Radio station operated and controlled by United States War Department, owner of vessel.
- CELLO.—Range, 150.
- CITY OF ROCKLAND.—System, Marconi, 400.
- CITY OF SOUTH HAVEN.—System, Marconi, 480.
- COALINGA.—Range, 150; system, Federal-Poulsen arc, 250; W. L., 300, 600, 1,800.
- COL. E. L. DRAKE.—System, Marconi, 1,000; W. L., 300, 450, 600.
- CROOK.—Range, 200 during day, 900 at night; system, United States Army, 1,000; W. L., 300, 600. Note, Radio station operated and controlled "by United States War Department, owner of vessel.
- CUBACAO.—Range, 150; system, Marconi, 400; service, PG; hours, N.
- DADE.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, N; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- DAWNITE.—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- DAYLITE.—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- DE SOTO.—Range, 150; system, Marconi, 1,000; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- Eocene.—System, Telefunken, 1,000; W. L., 300, 600; service, PG; hours, 9m-12m: 2s-5s; 8s-10: 30s; rates 4 c. per word 40 c. minimum per radiogram. Note, Standard Transportation Co., owner of vessel.
- FLORENCE LUCKENBACH.—Note, Luckenbach Co., Inc., owner of vessel.
- FRED'K LUCKENBACH.—Range, 200; system, Marconi, 240; service, PG; hours, X.
- GENERAL A. M. RANDOL.—System, United States Army, 1,000; W. L., 400; hours, X. Note, Radio station operated and controlled by United States War Department, owner of vessel.
- GENERAL E. O. C. ORD.—Range, 100; system, United States Army, 1,000; hours, X. Note, Radio station operated and controlled by United States War Department, owner of vessel.
- GENERAL HARVEY BROWN.—System, United States Army, 1,000; W. L., 400; hours, X. Note, Radio station operated and controlled by United States War Department, owner of vessel.
- GENERAL HENRY J. HUNT.—Range, 100; system, United States Army, 1,000; W. L., 600; hours, X. Note, Radio station operated and controlled by United States War Department, owner of vessel.
- GENERAL HENRY KNOX.—Range, 100; system, United States Army, 1,000; W. L., 600; hours, X. Note, Radio station operated and controlled by United States War Department, owner of vessel.
- GENERAL R. B. AYRES.—Range, 100; system, United States Army, 1,000; W. L., 600; hours, X. Note, Radio station operated and controlled by United States War Department, owner of vessel.

- GENERAL ROBERT ANDERSON.—System, United States Army, 1,000; W. L., 400; hours, X. Note, Radio station operated and controlled by United States War Department, owner of vessel.
- GENERAL ROYAL T. FRANK.—Range, 100; system, United States Army, 1,000; W. L., 600; hours, X. Note, Radio station operated and controlled by United States War Department, owner of vessel.
- GENERAL S. N. MILLS.—System, United States Army, 1,000; W. L., 600; hours, X. Note, Radio station operated and controlled by United States War Department, owner of vessel.
- GEORGIANA.—Range, 150; system, Marconi, 120; W. L., 300, 600; service, PG; hours, X; rates, North and South American service 4 c. per word 40 c. minimum per radiogram; transoceanic service 8 c. per word 80 c. minimum per radiogram.
- GLOUCESTER (KQG).—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- HAMILTON.—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- HATTIE LUCKENBACH.—Note, Luckenbach Co., Inc., owner of vessel.
- INCO No. 1.—Range, 150; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X.
- J. A. CHANSLOR.—System, Federal-Poulsen arc, 300; W. L., 300, 600, 1,800. Note, Radio station operated and controlled by Federal Telegraph Co.
- J. A. MOFFETT.—W. L., 300, 600, 1,800.
- JEFFERSON (KOD).—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- J. L. LUCKENBACH.—Note, Luckenbach Co. (Inc.), owner of vessel.
- KENTRA.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- KOREA.—System, Marconi, 480.
- KVICHAK.—W. L., 300, 400, 500, 600.
- LAKE LAND.—System, Marconi, 480.
- LAKEPORT.—Range, 100; system, Marconi, 480; service, PG; hours, X.
- LAKEWOOD.—Range, 100; system, Marconi, 480; service, PG; hours, X.
- LANSING.—Range, 150; system, Federal-Poulsen arc, 250; W. L., 300, 600, 1,800; hours, X. Note, Radio station operated and controlled by Federal Telegraph Co.
- LEWIS LUCKENBACH.—Note, Luckenbach Co. (Inc.), owner of vessel.
- L. ROSCOE.—Range, 150; system, Kilbourne & Clark, 1,000; W. L., 300, 600, 750; service, O; hours, X. Note, Alaska Engineering Commission, owner of vessel.
- MATINICOCK.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X.
- MEXICANO.—System, Marconi, 400; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- MOONLITE.—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- MORRILL.—W. L., 300, 600.
- MUNPLACE.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X.
- NEBRASKAN.—Name changed to *Rockingham*.
- NUSHAGAK.—W. L., 300, 400, 500, 600.
- OLEUM.—System, Federal-Poulsen arc, 250.
- PAMLICO.—W. L., 300, 600.
- PAN-AMERICAN.—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- PAVLOF.—Strike out all particulars.
- PETROLITE.—W. L., 300, 450, 600; hours, X.
- POLARINE.—W. L., 300, 450, 600; hours, X.

- REPUBLIC.**—Range, 150; system, Marconi, 480; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- RICHARD.**—Strike out all particulars.
- ROANOKE.**—Strike out all particulars.
- ROCKINGHAM.**—(Name formerly *Nebraskan*); system, Marconi, 1,000; W. L., 300, 450, 600. Note, Radio station operated and controlled by Marconi Co.; Garland Steamship Corporation, owner of vessel.
- ST. HELENS.**—Strike out all particulars.
- SAN JOSE.**—System, Marconi, 480.
- SANTA CLARA (WBA).**—System, Marconi, 480; hours, X.
- SATSUMA.**—Note, Barber & Co. (Inc.), owner of vessel.
- SIBERIA.**—Note, International Mercantile Marine Co., owner of vessel.
- SNOHOMISH.**—W. L., 300, 600.
- SOMERSET (KQS).**—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- STARLITE.**—Service, PG; rates, North and South American service 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- SUNLITE.**—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- TAMESL.**—Range, 200; system, Marconi, 480; service, PG; hours, X.
- THE LIMIT.**—Range, 100; system, Marconi, 480; W. L., 300, 600; service, PG; hours, X; rates, 2 c. per word 20 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- TWILITE.**—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.
- VANADIS.**—W. L., 300, 600.
- VENETIA.**—Range, 100; system, Marconi, 1,000; W. L., 300, 600; service, P; hours, X.
- VIRGINIA (WFH).**—System, Marconi, 480.
- VIRGINIA (WKV).**—Hours, X.
- WALLULA.**—System, Marconi, 120.
- WASHTENAW.**—Strike out all particulars.
- WHITTIER.**—Range, 150; system, Federal-Poulsen arc, 250; W. L., 300, 600, 1,800; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Federal Telegraph Co.
- WM. F. HERRIN.**—Range, 150; system, Federal-Poulsen arc, 300; W. L., 300, 600, 1,800. Note, Radio station operated and controlled by Federal Telegraph Co.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all the particulars following the call signals: WLK, WNO, WNY, WRR, WTH.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the list of Radio Stations of the United States, edition of July 1, 1915, only.]

FAYETTEVILLE, ARK.—Call, 5YM.

IOWA CITY, IOWA.—500, variable under 600 and over 1,600.

LINCOLN, NEBR.—Strike out all the particulars.

ST. LOUIS, Mo. (9YR).—Change to St. Louis, Mo. (9XY).

SPECIAL LAND STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all the particulars following the call signal: 9XT.

MISCELLANEOUS.

TRANSMISSION OF WEATHER REPORTS BY NAVAL RADIO STATIONS.

Through cooperation with local offices of the United States Weather Bureau, weather forecasts are sent broadcast to sea through naval coast radio stations at certain times, varying with the locality. Coast stations are generally prepared to give local forecasts to passing vessels without charge, on request. Storm warnings are sent whenever received and the daily weather bulletins are distributed by the naval radio stations at Arlington, Va., and Key West, Fla., a few minutes after the 10 p. m. time signal. These bulletins consist of two parts.

The first part contains code letters and figures which express the actual weather conditions at 8 p. m., seventy-fifth meridian time, on the day of distribution, at certain points along the eastern coast of North America, one point along the Gulf of Mexico, and one at Bermuda.

The second part of the bulletin contains a special forecast of the probable winds to be experienced a hundred miles or so off shore, made by the United States Weather Bureau, for distribution to shipmasters. The second part of the bulletin also contains warnings of severe storms along the coasts, as occasions for such warnings may arise.

Immediately following this bulletin, a weather bulletin for certain points along the Great Lakes is sent broadcast by the naval radio station at Arlington, Va., consisting of two parts. The first part contains code letters and figures which express the actual weather conditions at 8 p. m., seventy-fifth meridian time, on the day of distribution, at certain points along the Lakes. The second part of the bulletin contains a special forecast of the probable winds to be experienced on the Lakes during the season of navigation—about April 15 to December 10.

The points for which weather reports are furnished are designated as follows: *For Atlantic coast and Gulf points*, S=Sydney, T=Nantucket, DB=Delaware Breakwater, H=Hatteras, C=Charleston, K=Key West, P=Pensacola, and B=Bermuda; *for points on the Great Lakes*, Du=Duluth, M=Marquette, U=Sault Ste. Marie, G=Green Bay, Ch=Chicago, L=Alpena, D=Detroit, V=Cleveland, and F=Buffalo.

All bulletins begin with the letters U. S. W. B. (United States Weather Bureau) and the weather conditions follow. The first three figures of a report represent the barometric pressure in inches (002=30.02); the next figure, the fourth in sequence, represents the direction of the wind to the eight points of the compass: 1=north, 2=northeast, 3=east, 4=southeast, 5=south, 6=southwest, 7=west, 8=northwest, and 0=calm. The fifth figure represents the force of the wind on the Beaufort scale, on page following.

BEAUFORT SCALE OF WIND FORCE.

Number and designation.	Statute miles per hour.	Nautical miles per hour.
0 Calm.....	0 to 3	0 to 2.6
1 Light air.....	4	6.9
2 Light breeze.....	7	11.3
3 Gentle breeze.....	10	15.6
4 Moderate breeze.....	13	20.0
5 Fresh breeze.....	17	24.3
6 Strong breeze.....	22	29.5
7 Moderate gale.....	28	34.7
8 Fresh gale.....	34	41.6
9 Strong gale.....	40	48.6
10 Whole gale.....	48	56.4
11 Storm.....	56	65.1
12 Hurricane.....	75	85.1
	90 and over.	78.1 and over.

In order to simplify the code, no provision has been made for wind force greater than 9, strong gale, on the Beaufort Scale. Whenever winds of force greater than 9 occur, the number representing them is given in words instead of figures, thus: Ten, eleven, etc.

EXAMPLES OF CODE.

U S W B S 96465 T 91674 DB 94686 H 99886 C 01214
K 02622 P 03613 B 00065.

Translation.

United States Weather Bureau.

Station.	Pressure.	Wind.	
		Direction.	Force. ¹
Sydney.....	29.64	SW	5
Nantucket.....	29.16	W	4
Delaware Break water.....	29.46	NW	6
Hatteras.....	29.98	NW	6
Charleston.....	30.12	N	4
Key West.....	30.26	NE	2
Pensacola.....	30.36	N	3
Bermuda.....	30.00	SW	5

¹ See Beaufort Scale.

U S W B Du 95826 M 97635 U 00443 G 96046 Ch 95667
L 00644 D 00842 V 01054 F 01656

Translation.

United States Weather Bureau.

Station.	Pressure.	Wind.	
		Direction.	Force. ¹
Duluth.....	29.58	NE	6
Marquette.....	29.76	E	5
Sault Ste. Marie.....	30.04	SE	3
Green Bay.....	29.60	SE	6
Chicago.....	29.56	SW	7
Alpena.....	30.06	SE	4
Detroit.....	30.08	SE	2
Cleveland.....	30.10	S	4
Buffalo.....	30.16	S	6

¹ See Beaufort Scale.

TRANSMISSION OF TIME SIGNALS BY NAVAL RADIO STATIONS.

The transmission of time signals to vessels at sea by means of radiotelegraphy was first accomplished in the United States in 1905, and this service, enlarged and extended, has continued to the present time. This service is of the greatest value to mariners, as it furnishes a means by which the time, as given by the transmitted signals, may be compared with a ship's chronometer and the error of the chronometer found. Similar comparisons over a number of days enable data to be obtained by which not only the error may be found, but also the chronometer rate; that is, the rate at which it is gaining or losing.

The noontime signals on the Atlantic coast are sent out through the coast radio stations by connection with Western Union telegraph lines from the United States Naval Observatory at Washington, D. C. By the operation of proper relays in electrical circuits, the beats of the seconds of a standard clock in the observatory are sent out broadcast as a series of radio dots, commencing five minutes before the time of the final signal. By omitting certain dots in a series, the comparison between the dots and the beats of the chronometer seconds can be checked until the instant of local noon (seventy-fifth meridian time) is reached. This is marked by a longer dot, which gives the time of exact noon. A comparison with the chronometer time at that instant gives its error referred to the seventy-fifth meridian time. Applying the difference in longitude, namely, five hours, between the seventy-fifth meridian and Greenwich, which is the standard meridian (or 0° longitude), the error of the chronometer referred to Greenwich time is determined.

Time signals are now sent out on the Atlantic coast only through the radio stations at Arlington, Key West, and New Orleans. Signals from Arlington, which reach a zone formerly served by other coast stations, are sent out every day in the year twice a day, viz, at noon and 10 p. m., seventy-fifth meridian time. Time signals from Key West and New Orleans are sent out daily, including Sundays and holidays, commencing at 11.55 a. m., seventy-fifth meridian time, and ending at local noon.

In case of failure of the Arlington high-power station, the signals are sent out by the small set in the same station, and the stations at Boston, Newport, Norfolk, and Charleston are notified, and they each send the signals broadcast.

On the Pacific coast the time signals are sent broadcast to sea through the naval radio stations at Mare Island, Eureka, Point Arguello, and San Diego, Cal., and at North Head, Wash. The controlling clock for each station is in the naval observatory at the Mare Island Navy Yard. Signals from Mare Island are sent out every day from 11.55 to noon, and from 9.55 to 10 p. m., one hundred and twentieth meridian standard time. Those from North Head, Eureka, and San Diego are sent out daily, excluding Sundays and holidays, from 11.55 to noon, one hundred and twentieth meridian standard time.

To get the maximum clearness of signals, the receiving circuit should be tuned to that of the sending station. Arlington and Mare Island send on a 2,500-meter wave length, North Head and San Diego on a 2,000-meter wave length, Eureka on a 1,400-meter wave

length, and Key West and New Orleans on a 1,000-meter wave length. On the completion of the new radio station at the training station, Great Lakes, time signals will be transmitted from that station for the benefit of shipping on the Great Lakes, as well as the weather reports for that region, now transmitted by Arlington after the Atlantic coast weather bulletin, following the 10 p. m. time signals.

CHILEAN WIRELESS SERVICE.

The Bureau has been informed by the Chilean Administration, through the Bureau of the International Telegraphic Union, Radiotelegraphic Service, Berne, Switzerland, of the opening to public service early in April of the radiotelegraphic stations Valparaiso, Llanquihue, Frutillar, and Punta Arenas.

NOTICE TO AMATEURS.

The new list of "Radio Stations of the United States," edition of July 1, 1916, will contain the names, addresses, and call letters of all licensed amateurs of record in the Bureau on June 30, 1916, and where applications for station licenses are received after June 30, the names will not be published until the 1917 list is issued.

All amateurs who desire to have their names listed in the 1916 book should make an effort to have their licenses renewed without delay.

AN AMENDMENT TO RADIO REGULATIONS.

[To be cut out and pasted in your copy.]

Insert the following regulation which is made pursuant to the act of August 13, 1912, following paragraph 152, page 66, of the Radio Laws and Regulations of the United States:

Paragraph 152-a, page 66.

Holders of commercial extra first-grade radio operators' licenses may be issued renewal of such licenses without examination, provided the service records on the backs of the licenses properly certify to 12 months' satisfactory service in a land or ship station open to general public service, at least 6 months of which must have been served during the last 12 months of the license period.

However, holders of commercial extra first-grade licenses now employed as radio inspectors, radio instructors, or similar occupations requiring exceptional qualifications where the duties require the testing, or demonstrating, or otherwise using commercial radio apparatus and the telegraph codes, may be issued renewals of their licenses without reexamination, provided, in addition to the above, they can show satisfactory evidence of such service covering a period of 18 months out of the two-year license period. Where the applicant has not used regularly the telegraph codes, he will be given the code examination required in the original examination or, if he has used only one code, he will be examined in the code not used.

The service record shown on the licenses must be transcribed on Form 756.

The license may be marked "Expired" in red across the face and returned to the operator, if desired. The action taken should be noted on Form 756.

Where the record on the reverse side of the license does not show the service performed, the evidence submitted as proof of such service must be transmitted to the Bureau with Form 756.

Transcriptions of code tests must be submitted to the Bureau.

PORTUGUESE CENSORSHIP.

The Bureau has been informed through the International Telegraphic Bureau at Berne that beginning May 1 the Portuguese colonies will admit for transmission by their lines only private telegrams and radiograms which are worded in clear Portuguese, French, or English, and containing the signature of the sender. However, the use of divers codes established by special arrangement is maintained for commercial telegrams. The telegrams are accepted only at the risk and peril of the sender, and they are submitted to censorship, which may entail delay, and no request for reimbursement will be considered.

The use of the Italian language is admitted in correspondence between the Portuguese colonies and Italy, Lybia, and the Italian possessions in oriental Africa.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, July 1, 1916—No. 19

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WASHINGTON, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Longitude and latitude (approximate).	Call signal.	System.	Range.	Wave lengths.
Cape St. Elias, Alaska ¹	O 144 36 18 N 59 47 48	NLQ	United States Bureau of Light-houses, 1000.	100	600, 800, 1000, 1200.
Providence, R. I. ²	O 71 25 00 N 41 49 00	WPF	Chaffee arc.....	100	300, 425, 600

¹ Service, PG; rates, 6 c. per word 60 c. minimum per radiogram (ship communication, cable count; shore communication, domestic count). Note, Radio station operated and controlled by United States Bureau of Lighthouses, Washington, D. C.

² Service, P; hours, X. Note, Radio station operated and controlled by Dutée W. Flint. The station communicates only with the owner's yacht.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Owner of vessel.
Aztec (KZC).....	KZC	Marconi.....	.....	A. C. Burrage.
Bacoi ¹	KJU	Marconi, 1000.....	300, 450, 600	Standard Oil Co. of New Jersey.
Clincher.....	KMC	Marconi.....	300, 600	Clinchfield Navigation Co.
George E. Paddleford ²	WIV	.....do.....	300, 450, 600	Petroleum Transport Co.
Gettysburg.....	WCK	.....do.....	300, 600	Moore & McCormick Co.
Halcyon ³	KZL	Chaffee arc.....	300, 425, 600	Dutée W. Flint (yacht).
J. M. Danziger ²	WTW	Marconi.....	300, 450, 600	Petroleum Transport Co.
Josephine.....	KZU	.....do.....	.....	Joseph Widener.
Norwood ⁴	WSG	Kilbourne & Clark, 500....	300, 450, 525, 600.	Pacific-American Fisheries Co.
Westoll.....	KJT	Marconi.....	300, 600	Standard Oil Co. of New Jersey.

¹ Range, 150; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.

² Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co.

³ Service, P; hours, X. Note, Radio station operated and controlled by owner of vessel.

⁴ Range, 250; service PG; hours, X; rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio-gram station operated and controlled by owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
KJT	Westoll.....	NLQ	Cape St. Elias, Alaska..... c
KJU	Bacoi.....	WCK	Gettysburg..... b
KMC	Clincher.....	WIV	George E. Paddleford..... b
KZC	Aztec.....	WTW	J. M. Danziger..... b
KZL	Halcyon.....	WPF	Providence, R. I..... c
KZU	Josephine.....	WSG	Norwood..... b

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1915, only.]

Station.	Call signal.	Wave length.	Service.	Hours.	Station controlled by—
Bakersfield, Ohio.....	6ZW	<i>200, 425.....</i>	P	X	Lindley Winsor.
Beverly Farms, Mass.....	1ZH	<i>200, 300, 425, 600..</i>	P	X	Wilbur H. Hardy.
Eldora, Iowa.....	9ZI	<i>200, 425.....</i>	P	X	Donald R. Lewis.
Lewiston, Mont.....	7ZC	<i>200, 425.....</i>	P	X	Arthur C. Campbell.
Marlboro, Mass.....	1XS	<i>300, 600, variable..</i>	P	X	Louis Waldo Stevens.
Morgantown, W. Va.....	8XG	<i>650.....</i>	P	X	C. W. Waggoner (West Virginia University).
New Rochelle, N. Y.....	2ZK	<i>280, 425.....</i>	P	X	George C. Cannon.
New York, N. Y.....	2ZA	<i>300, 450, 600.....</i>	P	X	New York police department.
Pierre, S. Dak.....	9ZP	<i>200, 425.....</i>	P	X	Dana McNeill.
Pittsburgh, Pa.....	8XC	<i>1800, 2100, 3000...</i>	P	X	Carnegie Institute of Technology.
Seattle, Wash.....	7XE	<i>300, 600, variable..</i>	P	X	Marconi Co.
Stillwater, Minn.....	9YM	<i>200, 300, 425.....</i>	P	X	Fred B. Wood, Company K, Third Infantry, Minnesota National Guard.
Vancouver, Wash.....	7ZN	<i>200, 300, 425, 600..</i>	P	X	George H. Wallace.
Washington, D. C.....	3ZW	<i>200, 425.....</i>	P	X	Walther A. Parks.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1XS	First district:	7ZC	Seventh district—Continued.
1ZH	Marlboro, Mass.	7ZN	Lewiston, Mont.
	Beverly, Mass.		Vancouver, Wash.
2ZA	Second district:	8XC	Eighth district:
2ZK	New York, N. Y.	8XG	Pittsburgh, Pa.
3ZW	New Rochelle, N. Y.		Morgantown, W. Va.
6ZW	Third district: Washington, D. C.	9YM	Ninth district:
	Sixth district: Bakersfield, Cal.	9ZI	Stillwater, Minn.
7XE	Seventh district:	9ZP	Eldora, Iowa.
	Seattle, Wash.		Pierre, S. Dak.

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.

G. loc. =Geographical location: O=west longitude, N=north latitude.

Call =Call letters assigned.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths assigned: Normal wave lengths in italics.

Service=Nature of service maintained:

PG=General public.

PR=Limited public.

P=private.

O=Government business exclusively.

Hours =Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m. (12m=midday).

s=p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

OTHER ABBREVIATIONS.

Marconi Co.=Marconi Wireless Telegraph Co. of America.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

BOLINAS, CAL.—Range, 3,500; system, Marconi, 420; W. L., 6,100; service, limited commercial; hours, N; rates, cable count, 25 c. per word. Lettergrams \$1 for first 12 words, each additional word 8 c. Week-end letters, \$1.50 for first 24 words, each additional word 6 c. Note, Radio station operated and controlled by Marconi Co. The station communicates only with Koko Head, T. H.

EGEGAK, ALASKA.—W. L., 300, 500, 600; service, limited commercial. Note, Station limited to correspondence with ship and land stations of North Alaska Salmon Co.

FORT SHAFTER, HONOLULU, T. H.—Strike out all particulars.

HEEIA POINT, ISLAND OF OAHU, T. H.—W. L., 300, 600, 1,800, 3,000, 8,000, 9,300, 10,600; service PG and limited commercial; hours, 7.30m–11.30s. Note.—Radio station operated and controlled by Federal Telegraph Co. The station also communicates with South San Francisco, Cal., and Portland, Oreg.; rates, cable count, 25 c. per word to South San Francisco and 29 c. per word to Portland.

HOLLISTER, CAL.—System, Composite, 240; service, limited commercial. Note, Radio station operated and controlled by Palmer B. Hewlett. Station restricted to communicate with Oakland, Cal. (KGI).

HULL, MASS.—Strike out all particulars.

INGLEWOOD, CAL.—G. loc., O 118° 19' 48", N. 33° 58' 04"; range, 500; W. L., 300, 600, 3,300, 4,000; service, limited commercial; hours, 9m–6s. Note, Radio station operated and controlled by Federal Telegraph Co. Station communicates only with San Francisco, Cal., San Diego, Cal., and Phoenix, Ariz.; rates, for 15 words to San Diego, 25 c.; to San Francisco, 40 c.; to Phoenix, 50 c.¹

JACKSONVILLE, FLA.—W. L., 300, 450, 600; hours, 6m–8m, 10m–1s, 4s–7s.

KOGLUNG, ALASKA (KVV).—G. loc., O 156° 55' 30", N. 58° 52' 30"; range, 250; system, KILBOURNE & CLARK, 1,000; service, PG; hours, 6.30s–9.30s; rates, 6 c. per word, 60 c. minimum per radiogram.

KOKO HEAD, ISLAND OF OAHU, T. H.—Range, 2,200; system, Marconi, 420; W. L., 6,200; hours, N. Note, Radio station operated and controlled by Marconi Co. The station communicates only with Bolinas, Cal., and Tahiti, T. H.; rates, cable count, 25 c. per word. Lettergrams, \$1 for the first 12 words, each additional word, 8 c. Week-end letters, \$1.50 for first 24 words, each additional word, 6 c. Tahiti press rate, 20 c. per word.

LOS ANGELES, CAL. (KLS).—Range, 1,000; Federal-Poulsen arc; W. L., 300, 600, 1,800, 2,800, 3,250; service, PG; hours, 4m–10s; rates, North and South American service, 6 c. per word, 60 c. minimum per radiogram; transoceanic service, 12 c. per word, \$1.20 minimum per radiogram. Note, Radio station operated and controlled by Federal Telegraph Co. The station also communicates with San Francisco, Cal., San Diego, Cal., and Phoenix, Ariz. Rates, for 15 words to San Diego, 25 c.; to San Francisco, 40 c.; to Phoenix, 50 c.¹

MIAMI, FLA.—W. L., 300, 450, 600.

NEWTON, MASS.—Strike out all particulars.

NUSHAGAK, ALASKA.—W. L., 300, 500, 600; service, limited commercial. Note, Station limited to correspondence with ship and land stations of North Alaska Salmon Co.

PORT MOLLER, ALASKA.—Range, 250; hours, 6.30s–9.30s; rates, 6 c. per word, 60 c. minimum per radiogram.

SAN FRANCISCO, CAL. (KFS).—System, Federal-Poulsen arc; W. L., 300, 600, 1,800, 3,000, 3,500; service, PG; hours, 7m–2m; rates, North and South American service, 6 c. per word, 60 c. minimum per radiogram; transoceanic service, 12 c. per word, \$1.20 minimum per radiogram. Note, Radio station operated and controlled by Federal Telegraph Co. The station also communicates with Los Angeles, Cal., San Diego, Cal., and Portland, Oreg.; rates, for 15 words to San Diego, 40 c., to Los Angeles, 40 c., to Portland, 50 c.¹

SAVANNAH, GA.—W. L., 300, 450, 600.

¹ See table on p. 5, giving detailed explanation of rates.

SOUTH SAN FRANCISCO, CAL.—System, Federal-Poulsen arc; W. L., 300, 600, 1,800, 5,000, 8,000, 10,000; service, PG; rates, North and South American service, 6 c. per word, 60 c. minimum per radiogram; transoceanic service, 12 c. per word, \$1.20 minimum per radiogram. Note, Radio station operated and controlled by the Federal Telegraph Co. The station also communicates with San Diego, Cal., Los Angeles, Cal., Portland, Oreg., and Honolulu, T. H.; rates for 15 words to San Diego, 40 c.; to Los Angeles, 40 c.; to Portland, 50 c.; to Honolulu, 25 c. per word, cable count. Night letters to Honolulu, \$1 for first 12 words, 8 c. for each additional word, cable count. Week-end letters to Honolulu, \$1.50 for first 24 words, 6 c. for each additional word, cable count.¹

SAN DIEGO, CAL. (KSD).—Range, 500; system, Federal-Poulsen arc, 250; W. L., 300, 600, 1,800, 2,800; service, PG; hours, 4m–8s; rates, North and South American service, 6 c. per word, 60 c. minimum per radiogram; transoceanic service, 12 c. per word, \$1.20 minimum per radiogram. Note, Radio station operated and controlled by Federal Telegraph Co. The station also communicates with Los Angeles, Cal.; rate, 25 c. for 15 words.¹

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1915, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ALAMANCE.—Name formerly *Nevadan*; W. L., 300, 450, 600; hours, X. Note, Radio station operated and controlled by Garland Steamship corporation, owner of vessel.

ALOHA.—W. L., 300, 450, 600; hours, X.

ALVINA.—Range, 300; system, Telefunken, 1,000; W. L., 300, 600; service, P; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Thomas F. Cole, owner of vessel (yacht).

ARDMORE.—Range, 250; system, Marconi, 1,000; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co. Standard Oil Co., of New Jersey, owner of vessel.

ARIZONAN.—Hours, X.

BAYAMON.—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co. Vacuum Oil Co., owner of vessel.

BRAMELL POINT.—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co. Vacuum Oil Co., owner of vessel.

CAPE COD.—Range, 150; system, Marconi, 400; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

CORNING.—Range, 300; system, Marconi, 1,000; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

CORSAIR.—Range, 150; system, Marconi, 400; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

CUBADIST.—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X.

CUSHING (KSC).—Range, 300; system, Marconi, 1,000; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

¹ Detailed explanation of rates:

When regular rate of 15 words is—	Additional charge per word is—	Rate for day letter of 35 words in plain English is—	Rate for day letter of 50 words in plain English is—	Rate for night letter of 35 words in plain English is—	Rate for night letter of 50 words in plain English is—
\$0.25	\$0.02	\$0.38	\$0.38	\$0.25	\$0.25
.40	.03	.60	.60	.40	.40
.50	.03	.70	.75	.45	.50

- DAYTON.**—Range, 300; system, Marconi, 1,000; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- EL DIA.**—System, Marconi, 1,000; W. L., 300, 450, 600; hours, N; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- ELMER A. KEELER.**—Strike out all particulars.
- EMELINE.**—Strike out all particulars.
- EOCENE.**—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- EXPANSION.**—Range, 20; W. L., 300, 600; service, PG; rates, 4 c. per word 40 c. minimum per radiogram.
- FLORENCE (KYF).**—Strike out all particulars.
- FLORENCE LUCKENBACH.**—System, Marconi, 480; Note, Radio station operated and controlled by Marconi Co. Luckenbach Co. (Inc.), owner of vessel.
- FRANK H. BUCK.**—Range, 150; system, Federal-Poulsen arc; W. L., 300, 600, 1,800. Note, Radio station operated and controlled by Federal Telegraph Co. Associated Oil Co., owner of vessel.
- GALATEA.**—Range, 100; system, Marconi, 240; service, PG; hours, X.
- GLACIER.**—W. L., 300, 600.
- GULFSTREAM.**—System, Marconi, 480; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- HENRY J. BIDDLE.**—Range, 250; system, Kilbourne & Clark, 120; service, PG; hours, X; rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Columbia Contract Co., owner of vessel.
- HEWITT.**—Hours, 9m-12m, 2s-5s, 7s-9s; strike out rates. (The station conducts general public service, without rates.)
- H. H. ROGERS.**—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X.
- HIRAM B. EVEREST.**—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co. Vacuum Oil Co., owner of vessel.
- MARQUETTE & BESSEMER No. 2.**—System, Kilbourne & Clark, 240; W. L., 300, 425, 540, 600; service, PR. Note, Radio station operated and controlled by Marquette & Bessemer Dock & Navigation Co., owner of vessel. Station is limited to communication with the *Marquette & Bessemer No. 1* and a coast station at Conneaut Harbor, Ohio.
- MATINICOCK.**—System, Telefunken, 1,000; hours, 9m-12m, 2s-5s, 8s-10.30s.
- MUNSOMO.**—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X.
- MUSKOGEE.**—Range, 300; system, Marconi, 1,000; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- NAVAJO (WNJ).**—Note, Radio station operated and controlled by Marconi Co. Navajo Steamship Co., owner of vessel.
- NEVADAN.**—Name changed to *Alamance*.
- NOMA.**—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- RAMOS.**—Range, 50; system, Fessenden, 260; service, PG; hours, X.
- REUCE.**—System, Kilbourne & Clark, 240; W. L., 300, 525, 600.
- ROCHESTER.**—Name formerly *Yaquez*.
- SAMSON.**—Range, 100; system, Kilbourne & Clark, 120; service, PG; hours, X; rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by Columbia Contract Co., owner of vessel.
- SANTA RITA.**—Name formerly *William Chatham*. Note, Radio station operated and controlled by W. R. Grace & Co., owner of vessel.
- SARNIA.**—Note, Radio station operated and controlled by Marconi Co. Bay Steamship Co., of America (Ltd.), owner of vessel.
- SEGURANCA.**—Note, Radio station operated and controlled by Marconi Co. Seguranca Steamship Corporation, owner of vessel.
- SEWARD.**—Rates, 4 c. per word 40 c. minimum per radiogram.
- SIALIA.**—System, Telefunken. Note, Radio station operated and controlled by Atlantic Communication Co. J. K. Stewart, owner of vessel.
- SIBIRIA.**—System, Marconi, 240; hours, N. Note, Radio station operated and controlled by Marconi Co. Bay Steamship Co. of America (Ltd.), owner of vessel.

STANDARD.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.

ST. NICHOLAS.—System, Kilbourne & Clark, 240; W. L., 300, 525, 600.

TARANTULA.—Strike out all particulars.

VIGILANCIA.—Hours, X. Note, Radio station operated and controlled by Marconi Co. Gaston, Williams & Wigmore, owners of vessel.

W. B. KEENE.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram.

WESTWEGO.—W. L., 300, 450, 600.

WILLIAM CHATHAM.—Name changed to *Santa Rita*.

WYOMING.—W. L., 300, 600.

YAGUEZ.—Name changed to *Rochester*.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KDY, *read: Rochester*, b; WKZ, *read: Alamance*, b; WMC, *read: Santa Rita*, b.

Strike out particulars following the call signals, KVV, KYF, KZD, KZT, WLN, WLO, and WZH.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1913, only.]

ATLANTA, GA.—Strike out all particulars.

CAMBRIDGE, MASS.—W. L., 300, 550, 600.

HARTFORD, CONN. (1ZC).—Strike out all particulars.

NEW YORK, N. Y. (2YM).—W. L., 300, 400, 600, 2400.

SPECIAL LAND STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out 1ZC and 4XG.

MISCELLANEOUS.

INCREASE IN SALARIES OF ALASKA STEAMSHIP CO. RADIO OPERATORS.

The Alaska Steamship Co. has advised the Department that the schedule of salaries of their radio operators has been increased as follows:

Grade.	Former salary.	Present salary.
Junior operator.....	\$50	\$55
Senior operator.....	55	60
Combination operator.....	65	75

A combination operator is one who, in addition to his radio duties, assists in the work of the freight clerk while not on watch in the radio room. The salary of a freight clerk is \$90 per month, and vacancies for this position are filled by promotion from radio operator. By this policy radio operators of this company may rise, by promotion, to the highest position which the company has to offer on board ship.

NEW NAVAL RADIO SERVICE REGULATION.

The Superintendent of the Naval Radio Service announces that, effective on and after July 1, 1916, it will be obligatory on the part of a sender of radiograms to be handled by the Naval Radio Service to indicate in the address of the message the class of vessel it is desired to reach by this service, such as "SS" (steamship or steamer) or "USS" (United States ship), as the case may be. Example:

[Radio.]

John Doe
USS New Hampshire
Charleston, S. C.

This order becomes necessary, owing to the confusion in proper handling of such traffic, inasmuch as a large number of names of ships are the same as those of cities, towns, etc.

The extra word will be charged for and counted in the check.

AMENDMENT.

[To be cut out and pasted in copy.]

The Radio Laws and Regulations of the United States, edition of July 27, 1914, are hereby amended as follows:

Paragraph 126, page 64, amended July 1, 1916, to read:

The code test shall continue for 5 minutes at a speed of 20 words, 12 words, and 5 words a minute, respectively, for the commercial first, second, and lower grades, 5 letters, numerals, or other characters to the word, and to qualify the applicant must receive 20, 12, or 5 words in consecutive order accurately and legibly written. Operators will not be permitted to break or interrupt while receiving or to correct or alter the transcription after it has been submitted to the examining officer.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, August 1, 1916—No. 20

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WASHINGTON, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Latitude and longitude (approximate).	Call signal.	Range.	System.	Wavelengths.
Beaumont, Tex. ¹	O 94 07 00 N 30 06 00	WOD	300	Kilbourne & Clark, 1,000....	300,600
Carney's Point, N. J. ² ...	O 75 27 00 N 39 43 00	WPO	100	Composite, 800.....	300,425,600
Port Walter, Alaska ³	O 134 40 00 N 56 20 00	KEQ	100	Tyee, 240.....	300,500,525, 600
Wilmington, Del. ⁴	O 75 32 52 N 39 44 16	WPP	300	Composite, 200.....	300,425,600

¹ Service, PG; hours, 3 s-11 s; rates, 6 c. per word 60 c. minimum per radiogram. Radio station operated and controlled by the Magnolia Petroleum Co.

² Service, limited commercial; hours, X. Radio station operated and controlled by E. I. du Pont de Nemours & Co. Station is restricted to communicate with a station at Wilmington, Del.

³ Service, limited commercial. Radio station operated and controlled by the Alaska Herring & Sardine Co.

⁴ Service, limited commercial; hours, X. Radio station operated and controlled by E. I. du Pont de Nemours & Co. Station is restricted to communicate with a station at Carney's Point, N. J.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Owner of vessel.
Cyrus W. Field ¹	WXS	U. S. Army, 120.....	600	Government.
Harstele.....	KEW	Kilbourne & Clark, 120.....	300,600	J. D. Hardin, jr.
Juneau ²	WAM	Marconi.....	300,600	Alaska S. S. Co.
Maitland No. 1 ³	WLE		300,600	Toronto, Hamilton & Buffalo Ry. Co.
Mariposa ⁴	WHP	Kilbourne & Clark, 1,000....	300,455,525, 600.	Alaska S. S. Co.
Seafarer.....	WPL			Seafarer Navigation & Salvage Co.
Theodore Roosevelt ⁵	WCT	Marconi, 480.....	300,600	Roosevelt S. S. Co.
Valdez ⁶	WAK	Kilbourne & Clark, 240.....	300,600	Alaska S. S. Co.

¹ Range, 130; service, O. Radio station operated and controlled by the United States Signal Corps, War Department, Washington, D. C.

² Range, 100; service, PG; hours, X; rates, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by the owner of vessel.

³ Service, PG; rates, 2 c. per word 20 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co.

⁴ Range, 200; service, PG; hours, X; rates, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by the owner of vessel.

⁵ Range, 100; service, PG; hours, X; rates, 2 c. per word 20 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co.

⁶ Range, 100; service, PG; hours, X; rates, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by the owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.		Call signal.	Name.	
KEQ	Port Walter, Alaska.....	c	WLE	Maitland No. 1.....	b
KEW	Harstele.....	b	WOD	Beaumont, Tex.....	c
WAK	Valdez.....	b	WPL	Seafarer.....	b
WAM	Juneau.....	b	WPO	Carney's Point, N. J.....	c
WCT	Theodore Roosevelt.....	b	WPP	Wilmington, Del.....	c
WHP	Mariposa.....	b	WXS	Cyrus W. Field.....	b

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, only.]

Station.	Call signal.	Wave length.	Service.	Hours.	Station controlled by—
Hoquiam, Wash.....	7ZA	200, 300, 425, 600.....	P	X	Donald E. McGee.
Jacksonville, Ill.....	9YH	Variable to 425.....	P	X	Illinois Woman's College.
Lamoni, Iowa.....	9YO	200, 350, 425.....	P	X	Graceland College.
Monterey, Cal. (portable)	6XE	300, 600. Variable.....	P	X	National Radio Co.
Omaha, Nebr.....	9XU	800.....	P	X	Union Pacific R. R. Co.
Pittsburgh, Pa.....	8XK	450, 2,000. Variable.....	P	X	Frank Conrad.
Pottsville, Pa.....	8ZR	200, 425.....	P	X	Cotesworth M. Jackson.
Rapid City, S. Dak.....	9ZR	200, 425.....	P	X	S. R. Halley.
Salt Lake City, Utah.....	6ZI	200, 425.....	P	X	Stephen H. Besley.
San Francisco, Cal.....	6XI	300, 600. Variable.....	P	X	Clarence W. Smith.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
6XE	Sixth district: Monterey, Cal.	8ZR	Eighth district—Continued. Pottsville, Pa.
6XI	San Francisco, Cal.		Ninth district:
6ZI	Salt Lake City, Utah.	9XU	Omaha, Nebr.
7ZA	Seventh district: Hoquiam, Wash.	9YH	Jacksonville, Ill.
8XK	Eighth district: Pittsburgh, Pa.	9YO	Lamoni, Iowa.
		9ZR	Rapid City, S. Dak.

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this Bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.

G. loc. =Geographical location: O=west longitude, N=north latitude.

Call =Call letters assigned.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths assigned: Normal wave lengths in italics.

Service=Nature of service maintained:

PG=General public.

PR=Limited public.

P=private.

O=Government business exclusively.

Hours =Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m. (12m=midday).

s=p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

NOTICE.

It will be noted that the additions, alterations, and corrections contained in this Bulletin apply to the List of Radio Stations of the United States, edition of July 1, 1916, which is now in the hands of the printer, although it is not possible at this time to anticipate its delivery. All additions, alterations, and corrections appearing in this and later editions of the Bulletin should be saved and inserted in the new annual list as soon as it is received.

A sufficient number of blank pages will be inserted in the back of the new list in order that these particulars may be clipped and pasted therein, enabling radio operators and others concerned to keep their annual list up to date with very little trouble.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

AKRON, OHIO.—System, Composite, 480; W. L., 300, 600, 2000; service, limited commercial.

BURRWOOD, LA.—System, Wireless Specialty Apparatus Co., 1000; W. L., 300, 600, 2200.

DETROIT, MICH. (WOK).—W. L., 300, 600, 2160; service, limited commercial.

HUNTINGTON HARBOR, NORTHPORT, L. I., N. Y.—Strike out all particulars.

PORTLAND, OREG. (KDP).—W. L., 200, 300, 425, 550, 600. Note, Radio station operated and controlled by Charles L. Austin. The station is limited to communication with vessels entering and leaving the port of Portland, or bound to or from Columbia River points, and with amateurs.

PORT MOLLER, ALASKA.—Rates, 6 c. per word 60 c. minimum per radiogram.

WASHINGTON, D. C. (NZY).—Call, NZW.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ACHILLES.—Range, 500; system, Telefunken, 1000; W. L., 300, 450, 600, 750, 950, 1200; service, PG; hours, N; rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by the Panama Railroad Co. Maryland Steel Co., owner of vessel.

ACME.—Range, 150; system, Marconi, 1000; W. L., 300, 600; hours, X.

ADMIRAL WATSON.—W. L., 300, 450, 600.

ALABAMA (WFB).—System, Marconi, 480; hours, N.

ALASKA.—W. L., 300, 435, 510, 600; hours, N.

ALICIA.—Range, 60; system, De Forest arc; rates, 4 c. per word 40 c. minimum per radiogram.

AROLINE.—Range, 200; system, Kilbourne & Clark, 1000; W. L., 300, 440, 520, 600; rates, 4 c. per word 40 c. minimum per radiogram. Note, Radio station operated and controlled by the Pacific-Alaska Navigation Co., owner of vessel.

ATLANTIC.—System, Marconi, 480; rates, North & South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. Wilmore Steamship Co. (Inc.), owner of vessel.

AZTEC (KZO).—Range, 150; system, Marconi, 400; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. A. C. Burrage, owner of vessel.

BAYAMON.—Name, Vacuum.

CITY OF LOWELL.—System, Fessenden, 260; W. L., 300, 550, 600.

- CLINCHER.—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. Clinchfield Navigation Co., owner of vessel.
- COLOMBIA.—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. Pacific Mail Steamship Co., owner of vessel.
- CONNEAUT.—Range, 100; system, Marconi, 480; service, PG; hours, X.
- ECUADOR.—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. Pacific Mail Steamship Co., owner of vessel.
- ENTERPRISE.—System, Marconi, 1000; W. L. 300, 450, 600.
- GEORGE E. PADDLEFORD.—Range, 200; system, Marconi, 1000; hours, X.
- GEORGIANA.—Name, *Norlina*. Note, Radio station operated and controlled by the Marconi Co. Garland Steamship Corporation, owner of vessel.
- GOV. FORBES.—Name, *Governor Forbes*; range, 300. Note, Radio station operated and controlled by Ynchausti & Co., owner of vessel.
- GULFOIL.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- J. M. GUFFEY.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- JOHN A. HOOPER. Note, Radio station operated and controlled by the Marconi Co. W. R. Grace & Co., owner of vessel.
- MARQUETTE and BESSEMER No. 1.—System, Kilbourne & Clark, 240; W. L., 300, 425, 540, 600. Service, limited commercial. Note, Radio station operated and controlled by the Marquette & Bessemer Dock & Navigation Co., owner of vessel. Station is limited to communication with the *Marquette & Bessemer No. 2*, and a coast station at Conneaut Harbor, Ohio.
- ORLEANIAN.—Service, PG.
- PERU.—System, Marconi, 480.
- PETOSKEY.—Range, 100; system, Marconi, 480; service, PG; hours, X.
- RICHARD.—Strike out all particulars.
- SATELLITE (KPS).—Strike out all particulars.
- TATOOSH.—Rates, 4 c. per word 40 c. minimum per radiogram.
- TORMENTER.—Range, 100; system, Marconi, 240; service, PG; hours, X.
- VENEZUELA.—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. Pacific Mail Steamship Co., owner of vessel.
- WAKIVA.—Range, 150; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. H. S. Harkness, owner of vessel (yacht).
- WAPAMA.—Note, Radio station operated and controlled by the Marconi Co. Chas. R. McCormick & Co., owner of vessel.
- WAYFARER.—Name, *Warrior*; range, 300; system, Marconi, 480; W. L., 300, 600; service, P; hours X. Note, Alexander S. Cochran, owner of vessel (yacht).
- WESTOIL.—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.
- WINIFRED.—System, Marconi, 400; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- W. S. PORTER.—Strike out system. Note, Associated Oil Co., owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

KDX, *read*: Vacuum b; KJE, *read*: *Norlina* b; KYW, *read*: *Warrior* b; WJA, *read*: *Governor Forbes* b.

Strike out all particulars following the call signals KPS, WLG, and WLM.

Strike out particulars following call signal NZY, and insert *Washington, D. C.*, after call signal NZW.

MISCELLANEOUS.**ARGENTINE WIRELESS AND CABLE REGULATIONS.**

On May 8 the Argentinian Government promulgated the following decree relating to the transmission of cable and wireless messages proceeding from or destined to Europe, Africa, Asia, or Oceania:

ARTICLE 1. Cable and wireless messages from, for, or in transit through the Argentine Republic, proceeding from or destined to Europe, Africa, Asia, or Oceania, will be accepted at the risk of the senders and submitted to censorship.

ART. 2. Messages the contents of which might affect Argentine neutrality shall not be received.

ART. 3. Any language or speech is permitted for the form of such messages, bearing in mind the restrictions imposed by countries of transit and destination, and, with respect to messages in secret language, those the respective codes of which may have been previously authorized by the management of posts and telegraphs.

It is understood that the provisions of the decree in nowise affect messages to or from the United States nor messages in transit from South American countries.

RADIOTELEGRAPHIC TARIFF FOR SOCIETY ISLANDS.

By a decree of the governor the radiotelegraphic tariff for the Society Islands was proclaimed on May 6, 1916.

The tariff now in effect fixes the local rate at 12 cents a word (10 cents radio charge and 2 cents telegraphic charge from Papeete to the station at Mahina). There is an additional charge of 1 shilling (24 cents) a word for relaying via the radio stations at Apia, Samoa, and Awanui, New Zealand (6 pence (12 cents) per word for each station). To these rates must be added the charges of other systems for the delivery of the message at its final destination. The cost per word from Tahiti to Washington amounts to \$1.11.

COMMUNICATING WITH VESSELS AT SEA—REGISTRATION OF CABLE ADDRESSES.

The tariff also fixes the rate between the colony and vessels at sea. The cost per word in direct communication with a vessel within call of the station at Mahina is: Local charge 12 cents, plus ship's charge of 8 cents. The cost per word in communicating with a vessel by relay through Apia, Samoa, is: Local rate 12 cents, plus 12 cents for transmission by latter station, plus 8 cents vessel's charge, or 32 cents a word. When the communication reaches a vessel through two relaying stations (Apia and Awanui) the charge is: Local rate 12 cents, plus 1 shilling (6 pence for each station), plus 4 pence ship's rate, or 44 cents a word.

The rate of exchange from French to English currency, and vice versa, is fixed by decision of the colonial governor whenever required and in conformity with the international telegraphic regulations.

Under the newly established radio service, the registration of cable addresses in the colony is not provided for. Communications must be fully or sufficiently addressed to permit of the complete identification of the addressee. During the continuance of the war the strict censorship in New Zealand, through which all messages for Tahiti must pass, will not permit the transmission of communications whose

mode of address leaves in doubt the addressee's identity, or if the language of the message is other than English or French. Communications in code (private or international) will, therefore, not be accepted at New Zealand or at Tahiti.

RADIO SERVICE STATISTICS.

Class and number of radio station licenses issued, 1915 and 1916.

Class.	1915	1916	Class.	1915	1916
Commercial ship.....	362	444	Technical and training school....	15	33
General public service, land.....	41	51	Special amateur.....	37	67
Limited public service, land.....	11	17	General and restricted amateur....	3,510	4,875
Limited commercial, land.....	22	57	Total.....	4,039	5,601
Experimental.....	41	57			

The total number of station licenses issued to July 1, 1916, are as follows: 1913, 1,496; 1914, 2,309; 1915, 4,039; 1916, 5,601; total, 13,445.

Grade and number of radio operators' licenses issued.

Grade.	1913	1914	1915	1916	Total.
Commercial extra first.....			18	18	36
Commercial first and second.....	1,932	339	1,635	1,260	5,166
Experiment and instruction.....	8	10	27	30	75
Cargo.....	1	26	112	173	312
Amateur first and second.....	1,841	1,172	3,067	4,199	10,279
Total.....	3,782	1,547	4,859	5,680	15,868

Clearances and inspections of ships by districts.

1916	First, Boston.	Second, New York.	Third, Baltimore.	Fourth, Savannah.	Fifth, New Orleans.	Sixth, San Francisco.	Seventh, Seattle. ¹	Eighth, Cleveland.	Ninth, Chicago.	Total.
Clearances ¹	1,238	3,196	1,293	1,275	915	1,871	879	344	100	11,111
Inspections ¹	544	2,630	550	21	523	1,206	552	53	46	6,125
Inspections ²	27	186	45		65	93	174	150	371	1,111
Total inspections, 1916 ^{1,2}	571	2,816	595	21	588	1,299	726	203	417	7,236
Total inspections, 1915 ^{1,2}	428	2,382	569	13	665	1,517	356	138	84	6,152

¹ Vessels subject to the act of June 24, 1910, amended July 23, 1912, requiring radio apparatus on certain vessels.

² Vessels subject to the act of Aug. 13, 1912, voluntarily equipped with radio apparatus.

The total number of inspections for the fiscal years 1913 to 1916, inclusive, is as follows: 1913, 3,201; 1914, 6,486; 1915, 6,152; 1916, 7,236; total, 23,075.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, September 1, 1916—No. 21

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WASHINGTON, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:

E. F. SWEET,
Acting Secretary

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	Range.	Wave lengths.	Service.	Hours.	Station controlled by—
Latouche, Alaska ¹	KIM	150	300, 450, 600, 1650	PG	.....	Kennecott Copper Corporation.
Portland, Me. ²	WXV	30	.....	O	X	National Guard, State of Maine.

¹ System, Kilbourne & Clark, 1,000; rates, North and South American service, 6 c. per word, 60 c. minimum per radiogram.

² System, U. S. Army, 1,000.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Service.	Hours.
Adams ¹	NTI	U. S. Navy.....	300, 600	PG	N
Allen ¹	NJD	do.....	300, 600	PG	N
Arizona ¹	NBW	do.....	300, 600	PG	N
Balboa ²	WHU	Marconi.....	300, 600	PG	N
Barry ¹	NIC	U. S. Navy.....	300, 600	PG	N
Blakely ¹	NVX	do.....	300, 600	PG	N
Bushnell ¹	NZC	do.....	300, 600	PG	N
Callao ³	WHF	Halcun, 450.....	300, 600	PG	X
Chauncey ¹	NIF	U. S. Navy.....	300, 600	PG	N
Conyngham ¹	NJE	do.....	300, 600	PG	N
D-1 ¹	NXP	do.....	300, 600	PG	N
D-2 ¹	NXQ	do.....	300, 600	PG	N
D-3 ¹	NXR	do.....	300, 600	PG	N
Dale ¹	NIG	do.....	300, 600	PG	N
Davis ¹	NJF	do.....	300, 600	PG	N
D. G. Scofield ⁴	WRD	Marconi.....	300, 600	PG	N
Don Juan de Austria ¹	NQI	U. S. Navy.....	300, 600	PG	N
Dorothea ¹	NTS	do.....	300, 600	PG	N
Dupont ¹	NWC	do.....	300, 600	PG	N
Ericsson ¹	NIS	do.....	300, 600	PG	N
Essex ¹	NMY	do.....	300, 600	PG	N
Fort Bragg ⁵	WLH	Halcun.....	300, 600	PG	N
Fortune ¹	NVL	U. S. Navy.....	300, 600	PG	N
Fulton ¹	NZD	do.....	300, 600	PG	N
General Miffin ⁶	WZX	U. S. Army, 1,000.....	400	O	X
Gopher ¹	NNY	U. S. Navy.....	300, 600	PG	N
H. C. Folger ⁷	KHS	Marconi.....	300, 600	PG	N
J. W. Van Dyke ⁷	KHR	do.....	300, 600	PG	N
Kanawha ¹	NND	U. S. Navy.....	300, 600	PG	N
L-1 ¹	NYN	do.....	300, 600	PG	N
L-2 ¹	NYO	do.....	300, 600	PG	N
L-3 ¹	NYP	do.....	300, 600	PG	N
L-4 ¹	NYQ	do.....	300, 600	PG	N
L-9 ¹	NYV	do.....	300, 600	PG	N
L-10 ¹	NYW	do.....	300, 600	PG	N
L-11 ¹	NYX	do.....	300, 600	PG	N
M-1 ¹	NYV	do.....	300, 600	PG	N

¹ Rates, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by the United States Naval Communication Service, Radio, Va. Government, owner of vessel.

² Columbian Maritime Co., owner of vessel.

³ Range, 150. Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by George M. McNear (Inc.), owner of vessel.

⁴ Radio station operated and controlled by Standard Oil Co. of California, owner of vessel.

⁵ Radio station operated and controlled by Charles H. Higgins, owner of vessel.

⁶ Range, 30. Radio station operated and controlled by United States Signal Corps, War Department. Government, owner of vessel.

⁷ Atlantic Refining Co. (Philadelphia), owner of vessel.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS—continued.

Vessel.	Call signal.	System.	Wave lengths.	Serv-ice.	Hours.
Major Guy Howard ¹	WZY	U. S. Army, 1,000.....	400	O	X
Manga Reva ²	KIP	Marconi, 400.....	300, 600	PG	X
Marina Quezada ³	KHP				
Maumee ⁴	NNE	U. S. Navy.....	300, 600	PG	N
Melville ⁴	NKA	do.....	300, 600	PG	N
Memphis ⁴	NUG	do.....	300, 600	PG	N
Morris ⁴	NWS	do.....	300, 600	PG	N
Nevada ⁴	NCA	do.....	300, 600	PG	N
Oklahoma ⁴	NCB	do.....	300, 600	PG	N
Olympia ⁴	NGG	do.....	300, 600	PG	N
Pennsylvania ⁴	NCE	do.....	300, 600	PG	N
Patrol ⁵	WIP	Composite, 500.....	300, 325	(*)	X
Porter ⁴	NOO	U. S. Navy.....	300, 600	PG	N
Quiros ⁴	NQZ	do.....	300, 600	PG	N
Ransom B. Fuller ⁷	KRF	Marconi, 480.....	300, 600	PG	X
Resolute ⁸	KRM				
Rowan ⁴	NKR	U. S. Navy.....	300, 600	PG	N
Sampson ⁴	NKS	do.....	300, 600	PG	N
San Diego ⁴	NCZ	do.....	300, 600	PG	N
San Francisco ⁴	NTQ	do.....	300, 600	PG	N
San Pedro ⁹	WZZ	U. S. Army, 1,000.....	400	O	X
Severn ⁴	NZB	U. S. Navy.....	300, 600	PG	N
Sterling ⁴	NNL	do.....	300, 600	PG	N
Tampa ¹⁰	NRQ	U. S. C. G., 1,000.....	300, 600, 750, 1,000	PG	N
Tucker ⁴	NKV	do.....	300, 600	PG	N
Vixen ⁴	NSU	do.....	300, 600	PG	N
Wadsworth ⁴	NKW	do.....	300, 600	PG	N
Wainwright ⁴	NKX	do.....	300, 600	PG	N
Wilkes ⁴	NKG	do.....	300, 600	PG	N
Wolverine ⁴	NGW	do.....	300, 600	PG	N
Yantic ⁴	NHX	do.....	300, 600	PG	N

¹ Range, 30. Radio station operated and controlled by United States Signal Corps, War Department. Government, owner of vessel.

² Range, 200. Rates, North and South American service 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by Marconi Co. Brynhilda Shipping Corporation, owner of vessel.

³ Edwin C. Gregory, owner of vessel.

⁴ Rates, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by the United States Naval Communication Service, Radio, Va. Government, owner of vessel.

⁵ Range, 5. Radio station operated and controlled by city of Seattle, harbor department. City of Seattle, owner of vessel.

⁶ Service, limited commercial.

⁷ Range, 200. Rates, North and South American service 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by Marconi Co. Eastern Steamship Corporation, owner of vessel.

⁸ Merritt & Chapman Derrick & Wrecking Co., owner of vessel.

⁹ Range, 30. Radio station operated and controlled by United States Signal Corps, War Department. Government, owner of vessel.

¹⁰ Range, 300. Rates, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by United States Coast Guard. Government, owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship stations; c=land stations.]

Call signal.	Name.	Call signal.	Name.
KHP	Marina Quezada.....b	NQI	Don Juan de Austria.....b
KHR	J. W. Van Dyke.....b	NQZ	Quiros.....b
KHS	H. C. Folger.....b	NkQ	Tampa.....b
KIM	Latouche, Alaska.....b	NSQ	Vixen.....b
KIP	Manga Reva.....b	NTI	Adams.....b
KRF	Ransom B. Fuller.....b	NTQ	San Francisco (NTQ).....b
KRM	Resolute.....b	NTS	Dorothea.....b
NBW	Arizona.....b	NUG	Memphis.....b
NCA	Nevada.....b	NVL	Fortune.....b
NCB	Oklahoma.....b	NVX	Blakely.....b
NCE	Pennsylvania (NCE).....b	NWC	Dupont.....b
NCZ	San Diego.....b	NWS	Morris.....b
NGG	Olympia.....b	NXP	D-1.....b
NGW	Wolverine.....b	NXQ	D-2.....b
NHX	Yantic.....b	NXR	D-3.....b
NIC	Barry.....b	NYN	L-1.....b
NIF	Chauncey.....b	NYO	L-2.....b
NIG	Dale.....b	NYP	L-3.....b
NIS	Ericsson.....b	NYQ	L-4.....b
NJD	Allen.....b	NYV	L-9.....b
NJE	Conyngham.....b	NYW	L-10.....b
NJF	Davis.....b	NYX	L-11.....b
NKA	Melville.....b	NYV	M-1.....b
NKQ	Wilkes.....b	NZB	Seyern.....b
NKR	Rowan.....b	NZC	Bushnell.....b
NKS	Sampson.....b	NZD	Fulton.....b
NKV	Tucker.....b	WHF	Callao.....b
NKW	Wadsworth.....b	WHU	Balboa.....b
NKX	Wainright.....b	WIP	Patrol.....b
NMY	Essex (NMY).....b	WLH	Fort Bragg.....b
NND	Kanawha.....b	WRD	D. G. Scofield.....b
NNE	Maumee.....b	WXV	Portland, Me.....c
NNL	Sterling.....b	WZX	General Mifflin.....b
NOO	Porter.....b	WZY	Major Guy Howard.....b
NNY	Gopher.....b	WZZ	San Pedro.....b

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, only.]

Station.	Call signal.	Wave length.	Service.	Hours.	Station controlled by—
New York, N. Y. (2 YT).....	2YT	200, 300, 600	P	X	Marconi Co.
San Francisco, Cal. (6XW).....	6XW	300, 450, 600	P	X	Eldridge Buckingham.

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this Bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.

G. loc =Geographical location: O=west longitude, N=north latitude.

Call =Call letters assigned.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths assigned: Normal wave lengths in italics.

Service=Nature of service maintained:

PG=General public.

PR=Limited public.

P=private.

O=Government business exclusively.

Hours =Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m. (12m=midday).

s =p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

NOTICE.

It will be noted that the additions, alterations, and corrections contained in this Bulletin apply to the List of Radio Stations of the United States, edition of July 1, 1916, which is now in the hands of the printer, although it is not possible at this time to anticipate its delivery. All additions, alterations, and corrections appearing in this and later editions of the Bulletin should be saved and inserted in the new annual list as soon as it is received.

A sufficient number of blank pages will be inserted in the back of the new list in order that these particulars may be clipped and pasted therein, enabling radio operators and others concerned to keep their annual list up to date with very little trouble.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

BALTIMORE, MD.—System, Marconi-United, 240; W. L., 300, 450, 600.

BOSTON, MASS. (WCH).—Strike out all particulars.

CAPE ST. ELIAS, ALASKA.—Service, 0.

CLEVELAND, OHIO.—Hours, 8m–12m, 12.30s–7s, 8s–11s, 12s–7m.

EUREKA, CAL. (KPM).—W. L., 300, 530, 600.

ISLE ROYAL, MICH.—Strike out all particulars.

KOGGIUNG, ALASKA (KVV).—Service, PG.

LOS ANGELES, CAL. (KEX).—Strike out all particulars.

NAVASSA ISLAND.—System, Bureau of Standards, 1,000; W. L., 600, 750; service, limited commercial; hours, X. Notes: Radio station operated and controlled by Snare & Triest Co. United States Government (Bureau of Lighthouses), owner. The station is restricted to communication with Guantanamo, Cuba, and Bowden, Jamaica.

NEW LONDON, CONN. (NRZ).—G. loc., 72° 05' 40"—N. 41° 22' 40"; range, 100; system, U. S. Coast Guard, 120.

NEWPORT, R. I. (WCI).—Range, 100; system, National Electric Signaling Co., 1,000; hours, 7s–6m.

PROVIDENCE, R. I.—System, Marconi, 120; W. L., 300, 450, 600.

RIVER ROUGE, MICH. (WDR).—Note: This station is open during season of navigation only.

ROCHE HARBOR, WASH.—Strike out all particulars.

SAULT STE. MARIE, MICH.—Strike out all particulars.

SEATTLE, WASH. (KPE).—Range, 100; system, composite, 120; W. L., 300, 575, 600.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ADMIRAL FARRAGUT.—System, Kilbourne & Clark, 240; W. L., 300, 450, 515, 600.

ALASKAN.—Hours, X.

ARDMORE.—W. L., 300, 450, 600.

BUNKER HILL.—W. L., 300, 450, 600.

CALVIN AUSTIN.—System, Marconi, 400.
 CITY OF BANGOR.—System, Marconi, 480.
 CLINCHER.—Range, 250, system, Marconi, 1,000; hours, X.
 CORDOVA.—Hours, X.
 CORWIN.—Strike out all particulars.
 DOROTHY BRADFORD.—Note: Apparatus for emergency use only; not open to public service. Cape Cod Steamship Co., owner of vessel.
 ECUADOR.—Range, 200; system, Marconi, 240; hours, N.
 HALCYON.—System, Marconi; W. L., 300, 450, 600.
 HERBERT G. WYLIE.—W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
 J. M. DANZIGER.—Range, 250; system, Marconi, 1,000; hours, X.
 MIAMI (NRQ).—Strike out all particulars.
 NANN SMITH.—Strike out all particulars.
 OLD COLONY.—Strike out all particulars.
 RESTORER.—Hours, X. Note: Radio station operated and controlled by Marconi Co.
 SIALIA.—System, Telefunken, 1,000; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service 8 c. per word 80 c. minimum per radiogram. Notes: Radio station operated and controlled by estate of J. K. Stewart, owner of vessel.
 STANDARD ARROW.—Range, 250; system, Marconi, 1,000; hours, X.
 TOPILA.—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
 ULYSSES.—Range, 300; system, Kilbourne & Clark, 1,000; service, PG; hours, N; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram. Note: Radio station operated and controlled by Panama Railroad Co.
 VACUUM.—Range, 250; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X.
 W. S. PORTER.—W. L., 300, 600; 1,800.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all the particulars following the call signals: KEX, KJO, KRW, NRQ, WBO, WCH, WNN, WRO, and WSI.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, only.]

ANN ARBOR, MICH.—450, 600, 1,100, 2,000.
 FARMINGTON, CONN.—Strike out all particulars.
 ITHACA, N. Y. (8XU).—Call, 8XU; W. L., variable.
 MEMPHIS, TENN. (5XC).—Strike out all particulars.
 NEW YORK, N. Y. (2XH).—Strike out all particulars.
 NEW YORK, N. Y. (2XR).—Strike out all particulars.
 NEW YORK, N. Y. (2YS).—W. L., 250, 300, 600. Note: Radio station operated and controlled by Joseph G. Baier (Stuyvesant High School Radio Club).
 OAKLAND, CAL. (6XC).—Strike out all particulars.
 OAKLAND, CAL. (6XT).—Strike out all particulars.
 SEATTLE, WASH. (7XM).—Strike out all particulars.
 STEAMSHIP *Tyler*.—Strike out all particulars.
 WARREN, OHIO.—Strike out all particulars.

SPECIAL LAND STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all the particulars following the call signals: 1ZZ, 2XH, 2XR, 2XT, 5XC, 6XC, 6XT, 7XM, and 8XW.

MISCELLANEOUS.

MARINE DISASTERS IN WHICH WIRELESS FIGURED DURING FISCAL YEAR 1916.

1915.

July 2.—Steamship *Panuco* grounded at entrance to South Pass, La., with a crew of 35 aboard. Aid was summoned by wireless and the vessel was floated.

July 10.—The pilot boat *New Jersey* was rammed and sunk by the United Fruit steamer *Manchioneal* at the eastern entrance to Ambrose Channel. The steamship *Manchioneal* saved the crew, but the SOS calls sent out brought assistance promptly, which, however, was not needed.

July 11.—The *Invermore* was wrecked near Brig Harbor, Labrador. The distress call was sent by radio and the necessary aid was obtained.

July 15.—The steamship *Jutlandia* ran aground north of Gatun Locks, Panama Canal. The vessel was rescued, however, and no lives were lost.

July 22.—The steamship *Sucha*, while on fire in the Gulf of St. Lawrence, signaled for help by wireless, which was received by the *Royal George*, and the latter vessel proceeded to the rescue of the *Sucha*, but later received word by wireless that the fire had been extinguished and that assistance was not needed.

August 2.—The steamship *Georgian* went aground off Duxbury Reef. The steamship *Harvard* responded to the SOS call and no lives were lost.

August 4.—The *Emma Angel* was storm-battered and water-logged 45 miles south-east of the Highlands and signaled to the *Bermudian* near-by, which sent a wireless distress call, to which the *Seneca* responded and all on board were saved.

August 18.—The *El Sud* grounded on Galveston Bar. The tug *Senator Bailey* responded and brought the necessary assistance.

August 19.—The steamer *Baron Erskine* when one day from Avonmouth was torpedoed by a submarine. There were 108 persons on board, but no lives were lost.

August 20.—The steamer *Marrowjine* is supposed to have been sunk in a storm in the Gulf of Mexico. Nothing definite is known in regard to this disaster and probably never will be.

August 23.—Steamship *Metapan* grounded in Cartagena Harbor. There were 45 passengers and 19 in crew. The cargo was promptly discharged into lighters and steamer subsequently floated.

August 29.—Steamship *Admiral Watson* rammed by the steamship *Paraíso* while lying in dock, Seattle, Wash., sinking in 10 minutes. All aboard were saved with the exception of one person.

August 30.—Steamship *Edith*, of the Alaska Steamship Co., when 40 miles north-east of Cape St. Elias, listed badly on account of shifting of cargo of copper concentrates. The SOS call brought the necessary aid and all on board were saved. The fate of the vessel, however, has not been definitely learned.

September 13.—Steamship *Sant Anna*, of the Fabre Line, was on fire in mid-ocean, latitude 40° 23' north, longitude 47° 30' west. The SOS call brought the *Ancona*, which took off 600 persons and convoyed the distressed vessel to port. The *Sant Anna* carried 1,700 persons in addition to the crew.

September 19.—Steamship *Athinai* was destroyed by fire in mid-ocean, latitude 40° 54' north, longitude 58° 47' west. The *Tuscania* and *Romanian Prince* responded, resulting in the saving of 470 lives.

October 8.—Steamship *Mariposa* grounded and sank on rocky shore in Llama Passage, off Pointer Island, British Columbia. The SOS call was heard by two vessels. The *Despatch*, being within 30 miles, responded and rescued the 139 persons on board.

November 22.—Steamship *Santa Clara* was wrecked on jetty at Coos Bay, Oreg. Wireless succeeded in bringing a vessel to the aid of the wrecked ship and 93 persons were saved.

November 5.—The steamship *Fort Bragg* grounded in Gulf of California. The U. S. S. *San Diego* responded to the distress call and 47 persons were rescued.

November 5.—The steamship *Rio Lages* caught fire in mid-ocean, latitude 41° 58' north, longitude 59° 30' west. Distress calls were sent and all on board were saved.

November 8.—The steamship *Rochambeau* caught fire at sea and sent SOS call by wireless; later, however, she sent another message stating that the fire was under control.

November 9.—Steamship *Lievatta* (Italian), loaded with cased kerosene and gasoline, caught fire 65 miles east of Sabine Bar, Tex.; reported by wireless by steamship *Gulfstream*, which vessel stood by the burning steamer until other assistance, summoned by wireless, arrived from Port Arthur and Galveston. Without the assistance thus secured the vessel and cargo would have been a total loss.

November 27.—The steamship *Minnesota*, when 760 miles south of San Francisco, sent wireless stating that machinery was disabled. The necessary aid was rendered by the *Iroquois* and the tug *Dauntless*, which responded promptly upon hearing the distress call.

December 1.—Steamship *Flamenco* ran aground at South Pass, La. The accident was reported by wireless and rescue soon followed.

December 13.—Steamship *Antilla* collided with a barge beached off Sea Gate. Wireless was instrumental in saving the cargo.

December 27.—Steamship *Thessaloniki* sprung a leak about 400 miles southeast of Sandy Hook. Several vessels responded to the distress call and 300 persons were saved.

1916.

January 1.—Steamship *Vandeggen*, not equipped with wireless, showed signals of distress, which were seen by the steamship *Muskogee*. Message sent broadcast giving position of disabled steamer, which was later towed to port.

January 17.—Car ferry *Pere Marquette No. 19* went aground 4 miles north of Ludington, Mich., 7.40 p. m. Wireless communication established with Ludington and *Pere Marquette* car ferries *Nos. 17* and *18*, which were advised not to come in close on account of shoal water. Wireless used throughout salvage operations.

January 19.—Steamship *Pollentia*, 706 miles off Cape Race, in latitude 36° 30', longitude 35° 04', sinking, called SOS. Immediately answered by steamships *America*, *Guisepe Verdi*, *Moncenisio*, *Westerdyk*, and *Narragansett*. Crew of 35 rescued by boats from *Guisepe Verdi*, while *Narragansett* poured oil on waves.

January 22.—Steamship *Centralia*, off Columbia River, heavy seas washed away deck load, broke rudder, and flooded engine and wireless rooms. Aerial carried away, but repaired by operator, who then called SOS. Answered at once by steamships *Governor*, *Adeline Smith*, *Yosemite*, *Admiral Schley*, *Eurana*, and land stations at Marshfield and Eureka. Weather and sea finally moderated and ship made San Francisco safely without assistance.

January 23.—Steamship *Brazos* and steamship *Suffolk* in collision 23 miles south-east Scotland Light in dense fog. Wireless communication informed agents of accident and vessel returned to New York for repairs.

January 24.—Steamship *Frank H. Buck* when 355 miles north of San Francisco lost her rudder. Wireless used to summon aid.

January 26.—Steamship *Proteus* in collision with steamer *Brabant* below the narrows, New York Harbor. Wireless messages informed agents of accident which, however, was not serious.

January 30.—Steamship *Philadelphia* in collision with sailing ship *Ben Lee* 12 miles south of Carnavon Bay. Wireless used in notifying agents of accident.

February 1.—Steamship *Takata Maru* in collision with steamship *Silver Shell*; SOS answered by radio stations at Boston and Cape Race and various steamers. Crew rescued by *Silver Shell*.

February 4.—Steamship *Texas* (Swedish) reported by radio that cargo of cotton was on fire. Later reported fire under control and assistance not required.

February 4.—Steamship *Howard* in collision with barge off Point Judith. Barge sunk. Wireless used to notify owners of accident.

February 7.—Steamship *Harvard* rammed the steam schooner *Excelsior* in San Francisco Bay. Wireless calls brought immediate assistance from shore.

February 7.—Steamship *Caloria* ran aground head of South Pass, La. The distress call brought a number of tugs and lighters to her assistance.

February 15.—Steamship *Pavlof* struck an uncharted reef at 9.01 p. m. between Tugidak and Sitkanak Islands. At 9.12 p. m. SOS call was sent out and communication established with the naval radio station at Dutch Harbor. At 10 p. m. the *Pavlof* raised the naval radio station at Kodiak. The steamship *Alameda* was summoned from Cordova to the assistance of the distressed vessel, which had previously lost her propeller, and towed her to anchorage.

February 21.—Steamship *Middlesex* reported ashore inside Cross Rip. The radio operator on the steamship *Nacooche* notified the revenue cutter *Acushnet* at Woods Hole, which in turn informed the owners, thus obtaining the necessary assistance.

February 24.—Steamship *Polarine* went ashore on the 23d of February near Helsingborg. In answer to wireless distress call the steamship *Pioneer*, from Copenhagen, proceeded to assistance of stranded vessel.

February 24.—Steamship *Cretan* struck by steamship *Dorothy* 3 miles southeast Wimble Shoal buoy. SOS call sent out and answered at once by several ships. Later found assistance not required, as passengers were transferred to *Dorothy*, which was towed in by United States revenue cutter *Onondaga*. Communication with Marconi stations at Hatteras and Virginia Beach throughout.

February 28.—Steamship *Junata* went ashore in Vineyard Sound, Mass. Communication was established by radio and repairs directed by means of wireless.

February 28.—The French auxiliary cruiser *Provence II* (so designated to distinguish her from the French battleship *Provence*) was torpedoed and sunk in the Mediterranean Sea. French and British patrol boats, which were summoned by wireless, rescued 870 persons.

February 29.—Steamship *Multnomah* struck on Viti Rock off south end of Lummi Island in heavy fog. Wireless communication established with radio station at Seattle and accident reported. Vessel backed off rock and returned to Bellingham and beached in mud flats.

March 4.—Steamship *Apache*, 45 miles off Cape Henry, had machinery disabled and anchored in 25 fathoms. In answer to wireless message wrecking tugs towed her to port.

March 5.—Steamship *Principe de Asturias* foundered off Ponta Boi near Santos. In answer to distress calls the steamship *Vega* rescued practically all of the passengers and crew, of whom there were about 1,000.

March 14.—Steamship *Kanawha* sprang a leak and sank off the coast of South Carolina. The steamship *Santa Marta* picked up 21 of crew and notified other steamers by wireless to search for the other boat containing 7 of the crew.

March 14.—Steamship *Motano* grounded off Burrwood, La. Two tugs and three lighters responded to the distress call, with the aid of which the vessel was floated. There was no loss of life or damage to the vessel.

March 16.—Steamship *Zealandia*, of the Fiske Trading Co., in distress 300 miles off Sandy Hook with steering gear disabled. Wireless messages telling of the plight of the steamship relayed to radio station at Miami by the Standard Oil steamer *Richmond* and assistance sent to the disabled steamer.

March 16.—Steamship *Macona* ashore on Barbuda Island, British West Indies. Owners notified by wireless and arrangements made with wrecking company to send tug to relief of stranded steamer.

March 16.—Steamship *Sanonofre* ran short of coal during blizzard off Newfoundland coast, 500 miles from Halifax. In response to wireless calls was taken in tow by steamship *Ashtabula* and was towed to Halifax.

March 16.—Steamship *Cubantia* sunk by mine or torpedo near Noorhinder light-ship. Wireless calls for help sent out were first picked up at the Hook of Holland. All passengers and crew rescued.

March 20.—Steamship *Strombus* grounded across Southwest Pass Channel, 250 feet inside bell buoy. Several tugs responded to the distress call and succeeded in floating the vessel.

March 21.—Steamship *Bradford* leaving San Francisco had an accident to her rudder. Communication was established with the radio station at San Francisco and messages exchanged calling for assistance of vessels.

March 22.—Steamship *Minneapolis* sunk by submarine in the Mediterranean. Wireless SOS calls sent out stating that the *Minneapolis* had been torpedoed and was sinking. Calls answered by *Leicestershire* and other vessels, which went to the aid of the sinking steamer.

March 23.—Steamship *Alamo*, 130 miles northeast of Cape Hatteras, with a broken rudder and her engine disabled. Sent out wireless calls for help. A wrecking tug was sent to her assistance from Norfolk.

March 23.—Steamship *Svaland*, in latitude 44° north, longitude 55° 30' west, dismasted. Steamer *Murjek* reported a large crew on board and asked that tug be sent to assistance of distressed vessel.

March 27.—Steamship *San Cristobal*, owned by the Anglo-Mexican Petroleum Products Co., burned near her pier at Puerto, Mexico.

March 28.—Steamship *Rotterdam* grounded Southwest Pass Channel near bell buoy, with a crew of 36 on board. Several tugs responded to the distress call, and the vessel was floated March 30.

March 29.—Steamship *Siberia*, latitude 51° 8' north, longitude 7° 3' west, Irish Sea—received SOS call from British cruiser. In response the *Siberia* gave general distress call, which brought British destroyer to her assistance. The cruiser had been torpedoed by a submarine.

March 31.—Steamship *Chiyo Maru* grounded during fog on the Lema Islands. Wireless calls summoned nine tugboats and launches and a British torpedo boat destroyer, taking off 299 passengers.

April 2.—Steamship *Enterprise* broke her main shaft and damaged her stern. Wireless communication established with steamer *Manoa*, 150 miles away, and constant communication maintained all day until 8.30 p. m., when *Manoa* came alongside disabled steamer and took her in tow.

April 5.—Steamship *Patria*, of the Fabre Line, at 9.45 a. m. called SOS when 20 miles southwest Spartivento Sardinia, Torpille Manguee. The steamship *Siberia* answered and would have hastened to aid of the *Patria* if necessary, but at 10.30 a. m. the *Patria* sent word by radio that her assistance would not be required, as the torpedoed vessel had threatened the boat had missed her.

April 6.—Steamship *Zent*, of the Elder Line, torpedoed at Fastnet. Wireless calls for help sent out before the vessel sank brought assistance and most of the crew were rescued.

April 8.—Steamship *Madison*, Old Dominion Line, standing by two barges off Long Branch, N. J., flying distress signals. At 6.15 p. m., rescued five men from one barge and called the Coast Guard cutter *Mohawk* from New York to assistance of others.

April 8.—Schooner *Emma F. Angell*, latitude 37° 43', longitude 75° 08', sunk in collision with steamer *Cheptow Castle*. Crew of schooner rescued by latter. Accident reported by radio.

April 9.—Steamship *Guajara*, with passengers and freight from Rio for New York, 301 miles south of Scotland light, badly disabled. Wireless calls brought the steamship *Sizaola*, which vessel towed the disabled liner to Norfolk.

April 10.—Steamship *San Ramon*, Pacific Coast Line, lost her propeller at 3.30 a. m. Wireless messages through the radio station at San Francisco resulted in the sending of tugs to the assistance of the disabled steamer.

April 15.—Steamship *Wm. P. Hood* reported in distress 57 miles southwest of Five-Fathom Bank lightship by steamer *Jamestown*. Revenue cutter *Mohawk*, in answer to wireless messages, went to assistance of disabled vessel.

April 15.—Schooner *Mary E. Morse* off Hatteras in distress. Steamship *Lenape* standing by schooner and notified Norfolk by radio that dismasted schooner wished to be towed to port.

April 18.—Schooner *Millie R. Frank* observed by steamship *Madison* flying distress signals. The *Madison* informed the Coast Guard cutter *Mohawk* by wireless of the schooner's plight, which went to assistance of schooner. The crew was rescued by Toms River coast guards.

May 8.—Steamship *Philadelphian* collided with the Fire Island lightship. Communication was established by radio with the Sea Gate station, requesting that relief be sent at once. Wireless calls were responded to by the Coast Guard cutter *Mohawk*, and the damaged lightship taken in tow by the *Philadelphian* and brought to port.

May 9.—Steamship *Roanoke*, North Pacific Steamship Co., foundered and sank sometime during daylight hours. The operator, together with 47 others, lost his life; only six survivors were rescued. Two open boats were picked up by the steamer *Edgar Vance*, which notified shore stations of disaster.

May 11.—Barge *Ivie*, of the New England Coal & Coke Co., rammed and sunk in Hampton Road by steamer *Berkshire*. The *Berkshire* ashore on Hampton bar. The crew of barge rescued by steamer and owners notified of accident by radio.

May 14.—Steamship *Kandahar* on fire in Ambrose Channel. Facts reported to agent, who promptly sent fire boat from New York to assistance of burning vessel.

May 15.—Steamship *San Giovanni* and steamship *Grekland* in collision in a fog in Ambrose Channel near Sandy Hook. The *San Giovanni* established wireless communication with the station at Sea Gate and reported the accident. The United States Coast Guard cutter *Mohawk*, steamship *Portuguese Prince*, and steamship *Roma* went to assistance of distressed vessels.

May 19.—Steamship *Catania* went aground during heavy weather at Aransas Pass Bar, Tex. SOS signals promptly answered by radio station at Galveston, from which point a large tug was immediately dispatched to the distressed vessel. The tug succeeded in floating the *Catania* and towing her to Aransas docks. It is probable that without the prompt assistance secured by radio the vessel would have broken up, as a heavy gale was blowing.

May 29.—The bark *Joaquina*, when 51 days out of Alicante, Spain, found herself dangerously near rocks, entrance to harbor Guantanamo, Cuba. The steamship *An, tilles* discovered her plight and summoned a tug to her assistance by wireless.

June 14.—Steamship *Bear*, of the San Francisco & Portland Steamship Co., was wrecked off Cape Mendocino during the evening, the vessel grounding on a rock in a dense fog. The steamers *Queen*, *Grace Dollar*, U. S. S. *Oregon*, and the tug *Relief* responded to the distress calls sent. Five lives were lost as a result of capsizing of some of the lifeboats in the surf, while 200 passengers and crew were saved.

COAST SURVEY STEAMER MAKES RESCUE.

The Department has received a report of the rescue of the passengers and mail of the Spanish mail steamer *Fernando Po* by the Coast Survey steamer *Pathfinder*, on June 24 last, near Iloilo, P. I. The *Pathfinder* first picked up the SOS of the disabled steamer when about 180 miles distant, and immediately proceeded to the rescue, finding the *Fernando Po* stranded near Black Rock light, Tubbataha reef. After several futile attempts to float the steamer, the passengers and mail were taken off and carried to Iloilo, a distance of about 200 miles.

NAVAL COMMUNICATION SERVICE REGULATION.

The following announcement, which appeared in Radio Service Bulletin No. 19, of July 1, 1916, is being republished at the request of the Director of Naval Communications, particular attention being called to the fact that parentheses should be placed around "S C" in address of example shown. Failure of the sender of a radiogram to so inclose it may result in a charge being made for an additional word.

The Director of Naval Communications announces that, effective on and after July 1, 1916, it will be obligatory on the part of a sender of radiograms to be handled by the Naval Communication Service to indicate in the address of the message the class of vessel it is desired to reach by this service, such as "SS" (steamship or steamer) or "USS" (United States ship), as the case may be. Example:

[Radio.]

John Doe
USS New Hampshire
Charleston, (S C)

This order becomes necessary, owing to the confusion in proper handling of such traffic, inasmuch as a large number of names of ships are the same as those of cities, towns, etc.

The extra word will be charged for and counted in the check.

CHANGE IN TITLE OF NAVAL RADIO SERVICE.

Hereafter the Naval Radio Service will be known as the "Naval Communication Service." Charges on all traffic exchanged between other systems (radio, telegraph, and cable) and radio stations (ship and shore) operated by the Navy will be accounted for by the Naval Communication Service.

In addition to his other duties, the Director of Naval Communications will perform the duties formerly assigned to the Superintendent Naval Radio Service.

Correspondence relating to the Naval Communication Service should be addressed to the Director of Naval Communications, Radio, Va.

Remittances should be made payable to Naval Communication Service. If used, money orders should be drawn on postmaster, Washington, D. C.

MARCONI COMPANY INSURES ITS EMPLOYEES.

The Marconi Wireless Telegraph Co. of America has recently put into effect a system of life insurance for its operators and employees who have been in the Marconi service for more than one year, without expense to the holders of the policies. Accident insurance, valid for one year, has been furnished to such of the ship operators as are not eligible for regular life insurance under the conditions of the company's plan in order to give them protection until they become qualified for the life-insurance privilege. A suitable allowance will be made for personal effects lost by Marconi operators while on duty at sea in storms and wrecks. The company also will hold open the positions of its employees who wish to volunteer for service in the United States military forces, and can be spared, until January 1, 1917, allowing them half pay until that date, when the matter will receive further attention. The company has enrolled many of its rank and file as a naval reserve, having furnished the Navy Department with a complete list of its employees. The life-insurance announcement states:

Being constantly mindful of the loyalty and efficiency of our employees, and appreciating those qualities upon which the continued success of our company depends, and after a careful study of more than two years as to the best method of showing our appreciation, it has been decided to maintain for all employees without expense to them, insurance in the sum of \$500 for all those who have been with us over one year but less than five years, and in the sum of \$1,000 for all those who have been in the employ of the company five years or more.

In the announcement regarding accident insurance, E. J. Nally, vice president and general manager of the Marconi Co., said:

It gives me much pleasure to announce an extension of the company's insurance scheme which became effective April 1, 1916. As a further mark of appreciation for the work performed by our ship operators, the company desires to provide some protection for them until such time as they are eligible for regular life insurance, and it has therefore arranged to furnish without expense to ship operators not insured under the company's life plan a \$500 accident insurance policy.

The policy will be valid for one year and cover loss of life, both hands, both feet, one hand and one foot, or the sight of both eyes, by accident, in the amount of \$500.

Should the operator, upon passing into the life-insurance class, desire to continue the accident policy, arrangements have been made whereby he may do so at exceptionally low rates.

Employees of over one year's service, temporarily transferred to Government service under the call of the colors, will continue to be protected under the company's life-insurance plan, and such absence from duties will not interrupt the continuity of the employees' service and seniority benefits. Public spirit is also shown in the company's waiver of the usual fee charged students in its wireless school in New York, who will be instructed without cost.

AMENDMENTS.

[To be cut out and pasted in your copy.]

The Radio Laws and Regulations of the United States, edition of July 27, 1914, are hereby amended as follows:

Paragraph 73, page 57, amended September 1, 1916, to read:

Persons or corporations holding licenses for radio stations, either land or ship, should notify the radio inspector for the district whenever the station or vessel goes out of commission for a period exceeding three months. The Commissioner of Navigation should be notified promptly of any intention to suspend or discontinue the service of any commercial station.

Paragraph 74, page 57, amended September 1, 1916, to read:

If there is no intention to resume the same service, or if the station or vessel will enter a different service from that indicated by the license, the radio inspector will submit the license to the bureau, together with a statement of the facts, so that the license may be amended.

Paragraph 75, page 57, amended September 1, 1916, to read:

When the station goes into commission, the radio inspector will satisfy himself that the station corresponds to the schedule of the station as shown in the license.

Paragraph 93, page 59, amended September 1, 1916, to read:

Hereafter expired station licenses of all classes, commercial and amateur, need not be returned to the radio inspectors with applications for renewals. Owners desiring a renewal license must complete new forms, as prescribed for original applications. New licenses will be issued in every case of renewal.

ADDITIONAL COPIES

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, October 1, 1916—No. 22

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Longitude and latitude (approximate).	Call signal.	Range.	System.	Wave lengths.
Chichagof, Alaska ¹	O 136 9 20 N 57 36 30	KWW	50	Composite.....	300, 550, 600
Independence, Kans. ²	O 95 44 00 N 37 14 00	WQL	150	Composite, 480.....	1700
Kensington, Alaska.....		KDN		Marconi.....	
Wells, Minn. ³	O 93 45 00 N 43 45 00	WPT	150	Marconi, 240.....	500
Wichita, Kans. ⁴	O 97 20 00 N 37 42 00	WQM	200	Composite, 480.....	1700

¹ Service, limited commercial; hours, X. Radio station operated and controlled by Joseph T. Bauer. The station is limited to communication with Sitka and Juneau, Alaska, and ships of the Alaska Steamship Co. and the Pacific Coast Steamship Co.

² Service, limited commercial; hours, X. Radio station operated and controlled by Kansas Gas & Electric Co. The station is limited to communication with Wichita and Pittsburg, Kans.

³ Service, limited commercial; hours, X. Radio station operated and controlled by Wells Flour Mill Co. The station is limited to communication with stations of the International Milling Co.

⁴ Service, limited commercial; hours, X. Radio station operated and controlled by Kansas Gas & Electric Co. The station is limited to communication with Independence and Pittsburg, Kans.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Owner of vessel.
Admiral Goodrich ¹	WRJ	Kilbourne & Clark, 1,000....	300, 440, 520, 600	Pacific-Alaska Navigation Co.
Eureka.....	WAE	Marconi.....	300, 600	Alaska Steamship Co.
Henry R. Mallory ²	KFF	Marconi.....	300, 600	Mallory Steamship Co.
Kuskokwim River ³	WLK	Marconi, 1,000.....	300, 450, 600	Westward Nav. Co. (Inc.).
Luckenbach No. 1.....	KEO	Kilbourne & Clark.....		Edgar F. Luckenbach.
Maryland.....	KIN	Marconi.....	300, 600	Crew Levick & Co.
Santa Alicia ⁴	WSJ	Marconi, 480.....	300, 600	W. R. Grace & Co.
Sunoll ⁴	KWP	Marconi.....	300, 600	Sun Co.

¹ Range, 200; service, PG; hours, N; rates, 4 c. per word, 40 c. minimum per radiogram. Radio station operated and controlled by Pacific-Alaska Navigation Co., owner of vessel.

² Service, PG.

³ Range, 150; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by Marconi Co.

⁴ Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by Marconi Co.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
KDN	Kensington, Alaska..... c	WLK	Kuskokwim River..... b
KEF	Henry R. Mallory..... b	WPT	Wells, Minn..... c
KEO	Luckenbach No. 1..... b	WQL	Independence, Kans..... c
KIN	Maryland..... b	WQM	Wichita, Kans..... c
KWP	Sunoll..... b	WRJ	Admiral Goodrich..... b
KWW	Chichagof, Alaska..... c	WSJ	Santa Alicia..... b
WAE	Eureka..... b		

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this Bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

- Name =Name of station.
 G. loc =Geographical location: O=west longitude, N=north latitude.
 Call =Call letters assigned.
 System=Radio system used and sparks per second.
 Range =Normal range in nautical miles.
 W. L. =Wave lengths assigned: Normal wave lengths in italics.
 Service=Nature of service maintained:
 PG=General public.
 PR=Limited public.
 P=Private.
 O=Government business exclusively.
 Hours =Hours of operation:
 N=Continuous service.
 X=No regular hours.
 m=a. m. (12m=midday).
 s =p. m. (12s=midnight).
 Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)
 Notes =Refer to notes in the Berne list.

NOTICE.

It will be noted that the additions, alterations, and corrections contained in this Bulletin apply to the List of Radio Stations of the United States, edition of July 1, 1916, which is now in the hands of the printer, although it is not possible at this time to anticipate its delivery. All additions, alterations, and corrections appearing in this and later editions of the Bulletin should be saved and inserted in the new annual list as soon as it is received.

A sufficient number of blank pages will be inserted in the back of the new list in order that these particulars may be clipped and pasted therein, enabling radio operators and others concerned to keep their annual list up to date with very little trouble.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

DAVENPORT, IOWA.—Strike out all particulars.

DOVER, N. J.—Strike out all particulars.

MARSHFIELD, OREG.—Range, 150; hours, first and last 15 minutes of each hour from 8m. to 6s., time of the meridian 120° west of Greenwich.

NEWPORT, R. I. (WCI).—System, Fessenden, 1,000.

PORTLAND, OREG. (KGN).—System, composite, 450. Note, Station is restricted to communication with Underwood, Wash.

PORT WALTER, ALASKA.—Service, PG; hours, X; rates, 8 c. per word 80 c. minimum per radiogram.

RIALTO, CAL.—G. loc., O 117° 26' 53'', N. 34° 12' 08''.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- ALGONQUIN (KVG).**—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- AROLINE.**—Strike out all particulars.
- ARTISAN.**—Strike out all particulars.
- BATON ROUGE.**—System, Marconi, 1,000; W. L., 300, 450, 600; hours, X. Note, Radio operated and controlled by the Marconi Co.
- BAYWAY.**—System, Marconi, 1,000; W. L., 300, 450, 600; hours, X. Note, Radio station operated and controlled by the Marconi Co.
- BRILLIANT.**—W. L., 300, 450, 600; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- BRUNSWICK.**—Range, 150; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- CALIFORNIAN (WKC).**—System, Telefunken, 1,000; hours, X.
- CAMINO.**—System, Marconi, 400; hours, X.
- CITY OF DETROIT II.**—Hours, N.
- CITY OF EVERETT.**—Note, Standard Transportation Co., owner of vessel.
- CITY OF SYDNEY.**—Strike out all particulars.
- CITY OF TAUNTON.**—System, Fessenden, 260; W. L., 300, 550, 600.
- CLINCHER.**—Range, 100; W. L., 300, 450, 600.
- COMET (KTJ).**—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Standard Transportation Co., owner of vessel.
- CORNING.**—W. L., 300, 450, 600.
- CRASTER HALL.**—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- CUSHING (KSC).**—W. L., 300, 450, 600.
- DIANA.**—Range, 100; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X.
- D. G. SCOFIELD.**—Range, 150; system, Marconi, 1,000; W. L., 300, 450, 600, 1800 service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co.
- DOCHRA.**—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X. Note, Radio station operated and controlled by the Marconi Co. Barber & Co. (Inc.), owner of vessel.
- EL SIGLO.**—System, Marconi, 1,000; W. L., 300, 450, 600; hours, N; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- ERSKINE M. PHELPS.**—Strike out all particulars.
- EXCELSIOR.**—W. L., 300, 450, 600.
- FRANCIS HANIFY.**—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- GETTYSBURG.**—Range, 100; system, Marconi, 480; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co.
- GULFCOAST.**—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- H. C. FOLGER.**—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co.
- HYADES.**—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600.
- J. B. STETSON.**—Strike out all particulars.

J. W. VAN DYKE.—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co.

KANSAN.—Hours, N.

KOREA.—Strike out all particulars.

MAITLAND No. 1.—Range, 100; system, Marconi, 480; hours, X.

MOONLITE.—Range, 100; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X.

MOOREMACK.—Range, 200; system, Marconi, 400; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co.

MORENI.—W. L., 300, 450, 600; hours, X. Note, Radio station operated and controlled by the Marconi Co.

MOTANO.—W. L., 300, 450, 600; hours, X. Note, Radio station operated and controlled by the Marconi Co.

MOUNT HOPE.—W. L., 300; service, P (emergency only).

MUSKOGEE.—W. L., 300, 450, 600.

PANUO.—System, Marconi, 480; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

PERFECTION.—W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

RADIANT.—W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

RIO GRANDE (KEG).—Hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

ST. LOUIS (KSL).—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

SAN RAMON.—Hours, X. Note, San Ramon Steamship Co., owner of vessel.

SANTA ALICIA.—Strike out all particulars.

SEWARD.—Rates, 4 c. per word 40 c. minimum per radiogram. Note, William C. Procter, owner of vessel.

SOCONY.—Note, Standard Transportation Co., owner of vessel.

STARLITE.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X.

SUCROSA.—Range, 300; system, Marconi, 1,000; service, PG; hours, X.

TASCO.—W. L., 300, 600.

TRINIDADIAN.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

VESTA (KTS).—System, Marconi, 1,000; W. L., 300, 450, 600. Note, Standard Transportation Co., owner of vessel.

VIGILANCIA.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Gaston, Williams & Wigmore, owners of vessel.

VIRGINIA (KFR).—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X.

WANA.—Strike out all particulars.

W. B. FLINT.—Strike out all particulars.

MISCELLANEOUS.

COMMERCIAL RADIO OPERATORS LICENSED DURING MONTH OF AUGUST¹
1916.*First grade.*

Date.	Licenses.	Address.	Serial number.	Where issued.
7	Betts, Philander H.	238 Valley Rd., Montclair, N. J.	14683	Brooklyn. ²
4	Buckingham, Eldridge	2760 Scott St., San Francisco, Cal.	12372	San Francisco. ¹
2	Burhop, Harold J.	Valparaiso, Ind.	13713	Chicago. ¹
19	Cockett, William	666 56th St., Brooklyn, N. Y.	14689	Brooklyn. ²
9	Cooke, Robert L.	758 Kanan St., Honolulu, Hawaii.	13306	Honolulu. ²
2	Corey, Harry E.	Valparaiso, Ind.	13712	Chicago. ¹
14	Fish, Edward H.	27 Highland Ave., Middletown, N. Y.	14685	Brooklyn. ²
2	Fisher, Frank S.	6051 Woodlawn Ave., Chicago, Ill.	13711	Chicago. ¹
16	Flack, Henry	830 Park Ave., Brooklyn, N. Y.	14688	Brooklyn. ²
16	Gittleson, Mitchell	912 E. 180th St., New York, N. Y.	1-686	Brooklyn. ²
31	Harris, Charles C.	Freeport, N. Y.	14075	New York. ¹
23	Hatch, William B.	16 Cherry St., Collingdale, Pa.	13103	Mare Island. ²
17	Hyams, Jack	119 1/2 S. Spring St., Los Angeles, Cal.	12377	San Francisco. ¹
24	Johnston, James E.	1379 Clay Ave., New York, N. Y.	14690	Brooklyn. ²
4	Kendall, Lewis F., jr.	Millville, N. J.	14682	Brooklyn. ²
4	Kilton, James A., jr.	21 Lasell St., Auburndale, Mass.	1-260	Boston. ¹
3	Larson, Louis J.	971 Mission St., San Francisco, Cal.	12371	San Francisco. ¹
28	Marshall, Floyd W.	8 Avery Terrace, Detroit, Mich.	13717	Chicago. ¹
31	Moore, Daniel D.	2308 N. Charles St., Baltimore, Md.	14262	Boston. ¹
22	Norris, George H.	77 Melbourne Ave., Detroit, Mich.	13716	Detroit. ¹
9	O'Day, Howard H.	1706 Warwick Ave., Baltimore, Md.	12178	Baltimore. ¹
12	Philips, Warren, jr.	600 N. Olympia St., New Orleans, La.	12298	New Orleans. ¹
22	Platt, Paul T.	1-2 Sycamore St., Winter Hill, Mass.	14261	Boston. ¹
17	Roberts, Walter C.	U. S. Naval Radio Station, Yerba Buena, Cal.	12379	San Francisco. ¹
2	Russell, Stanley R.	218 Willow Ave., Somerville, Mass.	12911	Philadelphia. ²
25	Schmeling, Gustav J.	300 Lake Ave., Seattle, Wash.	14120	Seattle. ¹
29	Setzen, Harry T.	Fort Mason, Cal.	12380	San Francisco. ¹
16	Shebat, Herbert V.	2825 Hennepin Ave., Minneapolis, Minn.	14687	Brooklyn. ²
16	Shields, William L.	U. S. S. Ajax, care postmaster, San Francisco, Cal.	12179	Baltimore. ¹
15	Spenser, Edward R.	1640 23d Ave., Oakland, Cal.	12376	San Francisco. ¹
11	Stevenson, William H.	733 Millmore St., San Francisco, Cal.	12374	San Francisco. ¹
4	Taylor, Francis J.	U. S. S. Androscoggin, care postmaster, Boston, Mass.	14259	Boston. ¹
31	Van Scherpenreel, G. H.	Rotterdam, Holland	14076	New York. ¹
29	Werlein, Edwin	4060 Lincoln Ave., Chicago, Ill.	13718	Chicago. ¹
17	Westcott, Laurence M.	U. S. Naval Radio Station, Yerba Buena, Cal.	12378	San Francisco. ¹
26	Wiehr, Jack A.	U. S. S. Admiral Schley, Seattle, Wash.	14125	Seattle. ¹
15	Wisner, Fred L.	1316 30th St., San Diego, Cal.	12375	San Francisco. ¹
22	Young, David H.	850 Oak St., Columbus, Ohio	13715	Detroit. ¹
11	Zelevovitch, Emanuel	705 Jackson St., Oakland, Cal.	12373	San Francisco. ¹

Second grade.

2	Autry, James L., jr.	5 Courtlandt Pl., Houston, Tex.	12385	Chicago. ¹
17	Bennett, Herbert P.	4202 N. Winchester Ave., Chicago, Ill.	12337	Chicago. ¹
11	Bradshaw, Clyde B.	57 Billings Rd., Quincy, Mass.	12065	Boston. ¹
2	Church, Arthur B.	Lamoni, Iowa.	13714	Chicago. ¹
10	Collins, Frank J.	22 Cedar St., Yonkers, N. Y.	13821	Brooklyn. ²
10	Earle, Robert E.	Elgin, Iowa.	12336	Chicago. ¹
18	Marsh, Albert A.	11 Heard St., Chelsea, Mass.	12066	Boston. ¹
8	Noyes, William A., jr.	1005 Nevada St., Urbana, Ill.	13820	Brooklyn. ²
2	Rhoads, George L.	St. Albans, W. Va.	12384	Chicago. ¹
2	White, Donald G.	Valparaiso, Ind.	12383	Chicago. ¹

¹ Issued by radio inspector, Department of Commerce.² Issued by radio examining officer, Navy Department.

ALASKAN NAVAL RATES.

The Director of Naval Communications announces that, effective on and after October 1, 1916, the following rates, to conform as near as possible to the Washington-Alaska Military Cable and Telegraph system rates effective that date, will be placed in effect via the Naval Communication Service in Alaska. These rates will supersede all other rates in effect over this system. Full instructions will be issued by this office through amendments to the commercial traffic regulations.

SHIP-TO-SHORE SERVICE.

All traffic to or from ships at sea will be prefixed "Radio." Cable count will be used. Ten-word minimum will be required.

Naval radio stations at St. Paul, St. George, Dutch Harbor, Kodiak, Cordova, and Sitka will apply a 6-cent coast tax.

Service between any point in Alaska reached by the Naval Communication Service or the Washington-Alaska Military Cable and Telegraph system and any of these stations will carry a rate of 5 cents per word additional. This will also include North Head or Seattle for local delivery or for transfer to other systems to reach points beyond these systems. The traffic may be routed via either the Naval Communication Service or cable service or both. This rate does not include other line charges. Same should be added if it is necessary to employ other lines to reach destination. All commercial traffic for California should be forwarded to North Head and there placed on the wire instead of relaying to Eureka.

POINT-TO-POINT SERVICE.

The following rates will apply. Domestic count with 10-word minimum will be used (address and signature not counted). Both night service and night-letter service will be accepted. Collect replies will be accepted in either direction. No other collect traffic will be accepted. Prefix "Radio" will not be used.

	Day rate.	Night rate.
	<i>Cents.</i>	<i>Cents.</i>
North Head to Sitka (radio or cable).....	10	8
North Head to Cordova (radio or cable).....	15	11
North Head to Dutch Harbor, St. Paul, St. George, Kodiak.....	19	14
Sitka to Cordova (radio or cable).....	10	8
Cordova (radio or cable office) to St. Paul, St. George, Dutch Harbor, Kodiak.....	4	3
Dutch Harbor to St. Paul, St. George, Kodiak, Cordova (radio or cable office).....	4	3
St. Paul to St. George, Kodiak, Dutch Harbor, Cordova (radio or cable office).....	4	3
Kodiak to St. Paul, St. George, Dutch Harbor, Cordova (radio or cable office).....	4	3
Sitka to St. Paul, St. George, Dutch Harbor, Kodiak.....	9	7
St. Paul to Nome (includes Nome station charge).....	10	8

Two-cent loop charge (25 cents minimum charge per message) between Cordova radio and Cordova cable, also between Sitka radio and Sitka cable, will apply on local traffic only between such points.

Other radio stations in Alaska desiring to exchange traffic with the Naval Communication Service must communicate with the nearest naval radio station. Navy station receiving charge of 6 cents per word (10-word minimum) will apply. Add charges beyond.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, November 1, 1916—No. 23

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:

E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

Station.	Call signal.	System.	Wave lengths.	Service.	Hours.
Fire Island Lightship No. 68. ¹	NLS	U. S. Navy.....		O.....	X.
Fort Yukon, Alaska ²	WXX	U. S. Army.....	1, 100	PR.....	8m-6s.
Holy Cross, Alaska ²	WVK	U. S. Army, 1,000.		PG.....	10m-8s.
Lewiston, Mont. ³	KLP	Marconi, 600.....	300, 600, 1,600	Limited commercial.	X.

¹ Radio station operated and controlled by the United States Naval Communication Service, Radio, Va.

² Radio station operated and controlled by the United States Signal Corps, War Department, Washington, D. C.

³ Range, 150. Radio station operated and controlled by the Montana Power Co.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations, published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Service.	Hours.
Amolco.....	KMB	Wireless Specialty Apparatus Co.			
Cauto ¹	KWF	Marconi.....	300, 600.....	PG	N
Idaho ²	WOO	Marconi, 1,000.....	300, 450, 600.	PG	N
Joseph R. Parrott ³	KJP	Marconi.....	300, 600.....		
Luckenbach No. 2.....	KGC				
Luckenbach No. 3.....	KGF				
Luckenbach No. 4.....	KGG	Kilbourne & Clark			
Oregon ⁴	WOC	Marconi, 1,000.....	300, 450, 600.	PG	N
Panuco ⁵	KWM	Marconi.....	300, 600.....	PG	N
Paulsboro ⁶	KRS	Marconi, 1,000.....	300, 450, 600.	PG	X
P. S. No. 6 ⁶	IYP	Cutting & Washington, 1,000.	200, 300, 600.	P	X
William Rockefeller ⁶	KWO	Marconi.....	300, 600.....		
Wilmore ⁷	KIK	Marconi, 480.....	300, 600.....	PG	X

¹ Rates, North and South American service, 4 cents per word, 40 cents minimum per radiogram; transoceanic service, 8 cents per word, 80 cents minimum per radiogram. Radio station operated and controlled by the Marconi Co. New York & Cuba Mail Steamship Co. (Ward Line), owner of vessel.

² Rates, North and South American service, 4 cents per word, 40 cents minimum per radiogram; transoceanic service, 8 cents per word, 80 cents minimum per radiogram. Radio station operated and controlled by the Marconi Co. Wilson Bros. & Co., owner of vessel.

³ Rates, North and South American service, 4 cents per word, 40 cents minimum per radiogram; transoceanic service, 8 cents per word, 80 cents minimum per radiogram. Radio station operated and controlled by the Marconi Co. Florida East Coast Railway Co., owner of vessel.

⁴ Range, 300. Rates, North and South American service, 4 cents per word, 40 cents minimum per radiogram; transoceanic service, 8 cents per word, 80 cents minimum per radiogram. Radio station operated and controlled by the Marconi Co. Vacuum Oil Co., owner of vessel.

⁵ Range, 100. Radio station operated and controlled by the owner of vessel, Hermann Oelrichs.

⁶ Rates, North and South American Service, 4 cents per word, 40 cents minimum per radiogram; transoceanic service, 8 cents per word, 80 cents minimum per radiogram. Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.

⁷ Rates, North and South American service, 4 cents per word, 40 cents minimum per radiogram; transoceanic service, 8 cents per word, 80 cents minimum per radiogram. Radio station operated and controlled by the Marconi Co. Wilmore Steamship Co., owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
IYP	P. S. No. 6.....	b	KWF Cauto.....
KGC	Luckenbach No. 2.....	b	KWM Panuco.....
KGF	Luckenbach No. 3.....	b	KWO William Rockefeller.....
KGG	Luckenbach No. 4.....	b	NLS Fire Island Lightship.....
KIK	Wilmore.....	b	WOC Oregon.....
KJP	Joseph R. Parrott.....	b	WOO Idaho.....
KLP	Lewiston, Mont.....	c	WVK Holy Cross, Alaska.....
KMB	Amolco.....	b	WXX Fort Yukon, Alaska.....
KRS	Paulsboro.....	b	

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, only.]

Station.	Call signal.	Wave lengths.	Serv-ice.	Hours.	Station controlled by—
Albany, N. Y.....	2XK	Variable to 300....	P	X	New York State College for Teachers.
Bozeman, Mont....	7XB	300, 600.....	P	X	Montana State College.
Brookville, Pa.....	8YW	200, 450.....	P	X	Clarence M. Wickes.
Clayton, Cal.....	6XG	Variable.....	P	X	National Radio Co.
Fresno, Cal.....	6ZF	200, 425.....	P	X	Oliver M. Howard.
Keddle, Cal.....	6XU	Variable.....	P	X	National Radio Co.
Las Plumas, Cal....	6XK	.....do.....	P	X	Do.
Toledo, Ohio.....	8ZL	200, 425.....	P	X	Willis K. Wing (Scott High School).
Williamsport, Pa..	8XX	200, 700.....	P	X	Earl R. Thomas.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
2XK	Second district: Albany, N. Y.	7XB	Seventh district: Bozeman, Mont.
6XG	Sixth district: Clayton, Cal.	8XX	Eighth district: Williamsport, Pa.
6XK	Las Plumas, Cal.	8YW	Brookville, Pa.
6XU	Keddle, Cal.	8ZL	Toledo, Ohio.
6ZF	Fresno, Cal.		

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this Bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.

G. loc =Geographical location: O=west longitude, N=north latitude.

Call =Call letters assigned

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths assigned: Normal wave lengths in italics.

Service=Nature of service maintained:

PG=General public.

PR=Limited public.

P=Private.

O=Government business exclusively.

Hours =Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m. (12m=midday).

s=p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

NOTICE.

It will be noted that the additions, alterations, and corrections contained in this Bulletin apply to the List of Radio Stations of the United States, edition of July 1, 1916, which is now in the hands of the printer,

although it is not possible at this time to anticipate its delivery. All additions, alterations, and corrections appearing in this and later editions of the Bulletin should be saved and inserted in the new annual list as soon as it is received.

A sufficient number of blank pages will be inserted in the back of the new list in order that these particulars may be clipped and pasted therein, enabling radio operators and others concerned to keep their annual list up to date with very little trouble.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- BROOKS, ALASKA.**—Service, PR; hours, 9.30m to 10m, 1s to 1.30s, 4s to 4.30s; rate, 20 c. per word, \$2 minimum per radiogram. Notes, Radio station operated and controlled by the Alaska Wireless Telegraph Co. The station communicates only with the station of the United States Signal Corps, Fairbanks, Alaska.
- FORT MORGAN, ALA. (WFM).**—W. L., 300, 435, 600; service, PG and PR; hours, for PG service, sixth 5 minutes of each hour from 6m to 6s; for PR service, first 25 minutes of each hour from 6m to 6s.
- IDITAROD, ALASKA.**—System, Telefunken, 1,000; W. L., 500, 1650; service, PR; rates, to Nulato or Holy Cross, Alaska, 25 c. per word, \$2.50 minimum per radiogram, domestic count. Night letters to Nulato or Holy Cross, Alaska, \$2.50 for 50 words, 25 c. for each additional 10 words or fraction thereof, domestic count. Notes, Radio station operated and controlled by the Alaska Wireless Telegraph Co. The station is limited to communication with the United States Signal Corps stations at Nulato and Holy Cross, Alaska.
- JUNEAU, ALASKA.**—W. L., 300, 600, 3000; service, PG and PR; hours, 8m to midnight; rates, for general public service, North and South American service, 6 c. per word, 60 c. minimum per radiogram, transoceanic service, 12 c. per word, \$1.20 minimum per radiogram, for limited public service, as follows:

Messages.	To Seattle, Wash., or Astoria, Oreg.	To Ketchikan, Alaska.	To Jualin, Alaska.
Day messages:			
Per word.....	\$0.10	\$0.04	\$0.06
Minimum per radiogram.....	1.00	.40	.60
Night messages:			
Per word.....	.08	.....	.....
Minimum per radiogram.....	.80	.....	.....
Night letters:			
Per 10 words.....	.20	.08	.12
Minimum per radiogram of 50 words.....	1.00	.40	.60

NOTE.—All of the above are domestic count.

- LATOUCHE, ALASKA.**—W. L., 300, 600, 1650; service, PG and PR; hours, 1s to 5s. Notes, Radio station operated and controlled by the Kennecott Copper Corporation. The station also communicates with land stations at Cordova, Kodiak, and Sitka, Alaska. Rates, day messages, 6 c. per word, 60 c. minimum per radiogram, cable count; night messages, 75 per cent of day rate, domestic count; night letters, 60 c. for 50 words, 12 c. for each additional 10 words or fraction thereof, domestic count.
- MILWAUKEE, WIS.**—Hours, 8m–12m, 1s–5m, 6s–5m.
- MOBILE, ALA.**—W. L., 300, 535, 600; hours, PG service, last 35 minutes of each hour from 6m to 6s and continuous from 6s to 8.30s, PR service, first 25 minutes of each hour from 6m to 6s.

NEW ORLEANS, LA. (WNU).—W. L., 300, 600, 2200; rates, PG with ships, 12 c. per word, \$1.20 minimum per radiogram, PR rates, as follows, per word, cable count, no minimum:

	Cents.
All points in British Honduras.....	17½
Bluefields, Nicaragua.....	22½
Bocas del Toro, Panama.....	27½
Burwood, La.....	5
All points in Costa Rica.....	25
Swan Island.....	12½

PORT WALTER, ALASKA.—W. L., 300, 525, 600, 1625; service, PG and PR; rates, PG service, 6 c. per word, 60 c. minimum per radiogram, PR service with Juneau, Ketchikan, Wrangell, and Sitka, Alaska, day messages, 6 c. per word, 60 c. minimum per radiogram, cable count; night messages, 75 per cent of day rate, domestic count; night letters, 60 c. for 50 words, 12 c. for each additional 10 words or fraction thereof, domestic count.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berns bureau.]

ARBOREAN.—Strike out all particulars.

ASTRAL.—Range, 150; system, Marconi, 1000; hours, X.

ATLANTIC.—Strike out all particulars.

BAY STATE.—Strike out all particulars.

CACIQUE.—System, Federal Poulsen arc; W. L., 300, 600, 1800; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Radio station operated and controlled by the Federal Telegraph Co. W. R. Grace & Co., owner of vessel.

CLINCHER.—Strike out all particulars.

CONGRESS.—Strike out all particulars.

COSTA RICA.—System, Halcun, 400; hours, X.

DAYTON.—W. L., 300, 450, 600.

EURANA.—Notes, Radio station operated and controlled by the Marconi Co. Southland Steamship Co., owner of vessel.

F-4.—Strike out all particulars.

GEORGE E. PADDLEFORD.—Notes, Radio station operated and controlled by the Marconi Co. Pan American Petroleum & Transport Co., owner of vessel.

GEO. W. ELDER.—Range, 150.

GEORGIAN.—Strike out all particulars.

HARSTEELE.—Range, 100; system, composite, 240; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Steele Towing & Wrecking Co., owner of vessel.

HEALDTON.—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.

HENRY R. MALLORY.—Range, 250; system, Marconi, 1,000; W. L., 300, 450, 600; hours, N; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Co. Mallory Steamship Co., owner of vessel.

HIRAM B. EVEREST.—Strike out all particulars.

HONOLULAN.—Strike out all particulars.

I. D. FLETCHER.—Hours, X; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

J. M. DANZIGER.—Notes, Radio station operated and controlled by the Marconi Co. Pan American Petroleum & Transport Co., owner of vessel.

JUNEAU.—W. L., 300, 550, 600.

JUNIATA.—Notes, radio station operated and controlled by the Marconi Co. Great Lakes Transit Corporation, owner of vessel.

MARYLAND.—Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

MAVERICK.—Strike out all particulars.

MEMPHIS.—Strike out all particulars.

MINNESOTA (WMI).—Range, 150; rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word, 80 c. minimum per radiogram.

OCOTRARA.—Notes, Radio station operated and controlled by the Marconi Co. Great Lakes Transit Corporation, owner of vessel.

PRINCETON (KST).—W. L., 300, 450, 600; hours, X.

REPUBLIC.—Notes, Radio station operated and controlled by the Marconi Co. Braden Copper Co., owner of vessel.

SANTA RITA (WMC).—Call, WBR.

SOMERSET (KSU).—W. L., 300, 450, 600; hours, X.

SUNOIL.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X.

VIGILANT.—Range, 100; system, Marconi, 240; hours, X. Radio station operated and controlled by the Marconi Co. Bay Steamship Co. of America (Ltd.), owner of vessel.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, only.]

OIL CITY, PA.—Strike out all particulars.

RICHMOND, VA.—Strike out all particulars.

SAN DIEGO, CAL.—Strike out all particulars.

TIFFIN, OHIO.—Strike out all particulars.

MISCELLANEOUS.

COMMERCIAL RADIO OPERATORS LICENSED DURING MONTH OF SEPTEMBER, 1916.

Extra first grade.

Date.	Licensee.	Address.	Serial No.	Where issued.
15	Fish, Arthur S.....	4 Burton Ave., Roxbury, Mass.....	51	New Orleans. ¹
28	Swanson, John W.....	746 Columbus Ave., New York, N. Y.....	53	Washington. ¹
19	Worrall, Joseph A.....	163 Logan St., Brooklyn, N. Y.....	52	Washington. ¹

First grade.

2	Adickes, Ernest D.....	173 W. Ridgewood Ave., Ridgewood, N. J.....	14692	Brooklyn. ²
11	Bootes, Eugene H.....	Belleville, N. J.....	14077	New York. ¹
4	Bremer, Edmund H.....	301 W. Forest Ave., Detroit, Mich.....	13719	Chicago. ¹
29	Burns, Walter I.....	2320 Leavenworth St., San Francisco, Cal.....	12390	San Francisco. ¹
14	Case, Harlow M.....	Benzonia, Mich.....	13722	Frankfort, Mich. ¹
6	Christenson, Oscar.....	306 6th Ave., S. Seattle, Wash.....	14126	Seattle. ¹
25	Coblentz, Philip O.....	Middletown, Md.....	12182	Baltimore. ¹
29	Conway, Horace B.....	52 S. Beach St., Rockaway Pk., N. Y.....	14903	Brooklyn. ²
12	Cosby, Mark B.....	356 S. Hobart Ave., Los Angeles, Cal.....	12383	San Francisco. ¹
21	Eckstein, William J.....	35 W. 177th St., New York, N. Y.....	14698	Brooklyn. ²
19	Evans, Clarence.....	94 Union Ave., Nutley, N. J.....	14901	Brooklyn. ²
25	Farmer, E. S.....	208 W. 69th St., New York, N. Y.....	14700	Brooklyn. ²
19	Ferguson, Earl.....	1723 Melrose Ave., Seattle, Wash.....	14131	Seattle. ¹
22	Ferris, Willard.....	401 Lincoln Ave., Valparaiso, Ind.....	13725	Chicago. ¹
19	Gibson, Walter L.....	2324 Dennison St., Oakland, Cal.....	12386	San Francisco. ¹

¹ License issued by radio inspector, Department of Commerce.

² License issued by radio examining officer, Navy Department.

COMMERCIAL RADIO OPERATORS LICENSED DURING MONTH OF
SEPTEMBER, 1916—continued.*First grade—Continued.*

Date.	Licensee.	Address.	Serial No.	Where issued.
8	Griffin, William C.	Foot of W. 60th St., Seattle, Wash.	14122	Seattle. ¹
25	Hayes, Frank X. J.	162 E. 82d St., New York, N. Y.	14699	Brooklyn. ²
27	Hidalgo, Stephen	153 E. 86th St., New York, N. Y.	14082	New York. ¹
6	Hineline, William M.	Port Moller, Alaska	14123	Seattle. ¹
14	Hoernel, Paul C.	Babylon, L. I., N. Y.	14695	Brooklyn. ²
13	Isaacson, Charles B.	48 W. 89th St., New York, N. Y.	14691	Brooklyn. ²
16	Johannessen, George J.	1712 46th St. S.W., Seattle, Wash.	14130	Seattle. ¹
1	Johnson, Aubrey N.	2908 West Ave., Newport News, Va.	13589	Fort Monroe, Va. ³
18	Keeler, Fayette W.	634 W. Fourth St., Superior, Wis.	13723	Duluth. ¹
27	Koechel, Walter P.	Teaneck, N. J.	14081	New York. ¹
5	Kottler, Carl F.	1035 Second St., Milwaukee, Wis.	13720	Chicago. ¹
1	Krone, Julian E.	2908 West Ave., Newport News, Va.	13590	Fort Monroe, Va. ³
1	Lacock, Thomas J.	3 Danes Drive, Glasgow, Scotland.	12381	San Francisco. ¹
8	Landsburg, Robert A.	2909 Washington St., Seattle, Wash.	14127	Seattle. ¹
22	Lewis, Dean A.	30 Williams St., Northampton, Mass.	14265	Boston. ¹
5	MacMullen, Gerald F.	2425 Le Conte Ave., Berkeley, Cal.	13271	San Francisco. ¹
28	Maynes, Walter W.	1903 Bonita Ave., Berkeley, Cal.	12389	San Francisco. ¹
22	Neel, William G.	155 Locust St., Valparaiso, Ind.	13724	Chicago. ¹
12	Neuenburg, Henry C.	233 10th Ave., San Francisco, Cal.	12384	San Francisco. ¹
16	Nevin, William B.	813 Victoria St., Victoria, B. C.	14129	Seattle. ¹
2	O'Brien, Arthur	U. S. S. Preston.	13404	San Juan, P. R. ²
13	Oschmann, George J.	1093 Union Ave., New York, N. Y.	14078	New York. ¹
26	Powell, Aaron L.	4921 Magazine St., New Orleans, La.	12299	New Orleans. ¹
19	Pronier, Anthony B.	179 Tremont St., Newton, Mass.	12635	Boston. ¹
12	Rackov, Maurice.	35 Buena Vista Ter., San Francisco, Cal.	12382	San Francisco. ¹
5	Reichert, Karl.	P. O. Box 295, Marblehead, Mass.	14264	Boston. ¹
27	Ryan, Francis L.	1034 Bedford Ave., Brooklyn, N. Y.	14902	Brooklyn. ²
16	Sanchez, Manuel	416 W. 23d St., New York, N. Y.	14697	Brooklyn. ²
15	Sandbach, Charles.	2743 Kingsbridge Ter., New York, N. Y.	14079	New York. ¹
11	Smith, Owen	47 Catherine St., Valley Stream, N. Y.	14694	Brooklyn. ²
14	Stelzer, James G.	Frankfort, Mich.	13721	Frankfort. ¹
12	Sterrick, Harry L.	1168 Clay St., San Francisco, Cal.	12385	San Francisco. ¹
5	Whitcomb, Raymond E.	U. S. S. Acushnet, Woods Hole, Mass.	14263	Boston. ¹
23	Wunderlich, George	1736 Boren Ave., Seattle, Wash.	14132	Seattle. ¹

Second grade.

9	Bowman, Christopher M.	150 E. Chestnut St., Lancaster, Pa.	12477	Philadelphia. ²
18	Brasher, Lloyd	1666 N. White St., New Orleans, La.	12207	New Orleans. ¹
9	Egner, John	3126 N. 7th St., Philadelphia, Pa.	12475	Philadelphia. ²
9	Faries, Walter	Bala, Pa.	12476	Philadelphia. ²
6	Graf, Adolph A.	1061 Mulberry St., Rockford, Ill.	12338	Chicago. ¹
19	King, George J.	835 Exposition Blvd., New Orleans, La.	12208	New Orleans. ¹
22	Lynn, Harold W.	107 Alden St., Whitman, Mass.	12069	Boston. ¹
1	Mason, Howard F.	2702 31st Ave., S., Seattle, Wash.	12274	Seattle. ¹
1	Nickerson, Edgar W.	16 Atlantic Ave., Beverly, Mass.	12067	Boston. ¹
14	Pope, George W.	761 Manhattan Ave., Brooklyn, N. Y.	13822	Brooklyn. ²
22	Smith, Carlos M.	Lamoni, Iowa.	12340	Chicago. ¹
22	Winds, Guilford R.	873 Spruce St., Winnetka, Ill.	12339	Chicago. ¹
12	Woodhead, Edward F.	56 Summer St., Lewiston, Me.	12068	Boston. ¹

¹ License issued by radio inspector, Department of Commerce.² License issued by radio examining officer, Navy Department.³ License issued by radio examining officer, War Department.

RADIO STATIONS OF THE UNITED STATES.

[Edition of July 1, 1916.]

Government, commercial, and special land stations.

Controlled by—	General public.		Limited public.		Limited commercial.		Special.		Government official.		Total.	
	1915	1916	1915	1916	1915	1916	1915	1916	1915	1916	1915	1916
United States Navy.....	21	24	1	1	.....	.....	.....	.....	33	32	55	57
United States Army.....	9	9	.....	.....	.....	.....	.....	.....	39	45	48	54
Philippine insular government.....	6	6	.....	.....	.....	.....	.....	.....	.....	.....	6	6
Marconi Co.....	45	44	4	6	10	9	1	1	.....	.....	60	60
National Electric Signaling Co.....	2	2	1	1	1	1	.....	.....	.....	.....	4	4
Tropical Radio Telegraph Co.....	2	2	.....	1	.....	2	.....	1	.....	.....	2	5
Federal Telegraph Co.....	3	5	4	5	1	1	.....	.....	.....	.....	8	12
Mutual Telephone Co.....	3	1	.....	2	2	3	.....	.....	.....	.....	5	6
Unclassified.....	7	10	3	2	32	39	127	193	2	4	171	248
Total.....	98	103	13	18	46	55	128	195	74	81	359	452

Ship stations.

Controlled by—	Number.		Controlled by—	Number.	
	1915	1916		1915	1916
United States Navy.....	228	233	Alaska Steamship Co.....	12	12
United States Coast Guard.....	24	25	Standard Oil Co.....	11	10
United States Army.....	51	50	Panama Railroad Co.....	.....	5
United States Department of Commerce.....	7	8	Pacific-Alaska Navigation Co.....	5	5
Marconi Co.....	367	414	Federal Telegraph Co.....	5	17
National Electric Signaling Co.....	20	20	Atlantic Communication Co.....	3	5
Tropical Radio Telegraph Co.....	21	21	Unclassified.....	120	76
American-Hawaiian Steamship Co.....	21	19	Total.....	895	920

Amateur stations.

District and headquarters.	Number.		District and headquarters.	Number.	
	1915	1916		1915	1916
1. Boston, Mass.....	542	832	7. Seattle, Wash.....	203	215
2. New York, N. Y.....	636	840	8. Detroit, Mich.....	785	945
3. Baltimore, Md.....	682	821	9. Chicago, Ill.....	515	769
4. Savannah, Ga.....	54	103	Total.....	3,836	5,255
5. New Orleans, La.....	56	116			
6. San Francisco, Cal.....	363	614			

RADIO STATIONS OF THE UNITED STATES—continued.

Summary.

Kind of station.	1915	1916	Kind of station.	1915	1916
Government land stations.....	109	117	Other land and ship stations, except general and restricted amateur land stations.....	834	939
Other land stations, except gen- eral and restricted amateur.....	249	335	Total.....	1,253	1,372
Total.....	358	452	General and restricted amateur stations.....	3,836	5,255
Government ship stations.....	310	316	Grand total.....	5,089	6,627
Other ship stations.....	585	604			
Total.....	895	920			
Government land and ship sta- tions.....	419	433			

RECENTLY ORGANIZED RADIO CLUB.

Extracts from the Yearbook of the San Francisco Radio Club.

OBJECT AND PURPOSE.

During the early part of January, 1916, a number of prominent commercial and experiment radio operators of San Francisco met in order to discuss the possibility of organizing a radio club in that city. The number of enthusiastic operators largely reached the dozen mark, but regardless of the small number present, a prosperous future for a radio organization was foreseen, and the necessary steps toward founding an organization were taken. Radio operators throughout the city were notified of the undertaking and were urged to give all possible support to insure a huge success.

A meeting was held and the number of responders was surprisingly large. A constitution was framed, submitted for approval at a later date, and finally signed by 15 charter members. The situation was then well in hand, and the membership of the club increased rapidly as the weeks passed by, until at the present time 36 radio men are in possession of the membership card.

MEMBERSHIP AND QUALIFICATIONS.

The membership comprises:

(a) Members who either hold a first-grade commercial license or better or who have passed the club examination of that grade.

(b) Associates who are interested in radio communication.

Associate members desiring to become full members are examined when their capability permits, and if they are successful in passing the club examination they are transferred from the grade of associate to member. A certificate of skill will be issued to all associates who successfully pass the examination.

MEETINGS.

Meetings of the San Francisco Radio Club are held every Friday evening at the club room, 737 Shrader Street, at 8 o'clock.

The four meetings per month comprise an experiment meeting, a social meeting, and two business meetings. At the experiment meeting various electrical and radio apparatus are demonstrated. Experiments impossible for a single experimenter to perform have been made possible by the cooperation of the members.

ADVANTAGES OF MEMBERSHIP.

The San Francisco Radio Club offers many distinct advantages to its members. Radio men in all grades of experience come together, exchange ideas, relate experiences, benefit by interesting and educational lectures, and learn the methods of good speech delivery. Commercial operators come into contact with amateur operators and experimenters; interference between stations is reduced to a minimum, and the maximum of efficiency is secured from the experimenters' apparatus with the aid

of accurately calibrated measuring instruments which the club possesses. Privately owned stations are tuned to resonance to comply with the regulations of the Department of Commerce without charge to the owner.

NEW WIRELESS STATION ON AFRICAN COAST.

Military engineers are erecting a wireless station on Cape Juby, on the African coast, and expect to have it in operation before October 1. In cases of need at sea the service will be available for ships in distress. As the big installation on Teneriffe Island is less than 100 miles from the Cape Juby plant, communication with the Canary Islands will be possible and, through them, with the Spanish mainland.

A regular steamship service to Cape Juby, with sailings from Santa Cruz de Teneriffe on the 28th of each month, has been announced in the newspapers.

ALASKAN RADIO STATIONS CLOSED.

The bureau has been informed that the following land stations in Alaska have been closed for the season, and will not be reopened until March, 1917: Akutan (KNW), Chignik (KHC), Egegak (KMF), Hales Creek (KMT), Koggiung (KVV), Koggiung (KHB), Naknek (KHT), Naknek (KMK), Nushagak (KMG), and Snag Point (KHF).

TWO NEW WIRELESS STATIONS FOR COLOMBIA.

It is reported that the two Marconi outfits purchased by the Colombian Government some time ago will be delivered soon. It is intended to establish these two stations at Arauca and Orocué. The former is situated on the Arauca River where it forms the boundary between Colombia and Venezuela, and the latter is on the Meta River some 200 miles east of Bogota.

ADDITIONAL COPIES

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, December 1, 1916—No. 24

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

SHIP STATIONS; ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Serv-ice.	Hours.
A-2 *	NXB	U. S. Navy	300,600	PG	N
A-3 *	NXC	do	300,600	PG	N
A-4 *	NXD	do	300,600	PG	N
A-5 *	NXE	do	300,600	PG	N
A-6 *	NXF	do	300,600	PG	N
A-7 *	NXG	do	300,600	PG	N
Accomac *	NTH	do	300,600	PG	N
Active *	NTJ	do	300,600	PG	N
Alleen *	NVO	do	300,600	PG	N
Alice *	NTM	do	300,600	PG	N
Apache *	NTN	do	300,600	PG	N
Arapahoe *	NSP	do	300,600	PG	N
B-1 *	NXH	do	300,600	PG	N
B-2 *	NXI	do	300,600	PG	N
B-3 *	NXJ	do	300,600	PG	N
Bagley *	NVU	do	300,600	PG	N
Barney *	NVV	do	300,600	PG	N
Benjamin Brewster ¹	KPS	Marconi.	300,600	PG	
Biddle *	NVW	U. S. Navy	300,600	PG	N
Boston *	NGC	do	300,600	PG	N
Boxer *	NSY	do	300,600	PG	N
Britannia ²	KXS	Marconi, 1,000.	300,450,600	PG	X
Brynhilda ³	KIO	Marconi.	300,600	PG	
C-1 *	NXX	U. S. Navy	300,600	PG	N
C-2 *	NXL	do	300,600	PG	N
C-3 *	NXM	do	300,600	PG	N
C-4 *	NXN	do	300,600	PG	N
C-5 *	NXO	do	300,600	PG	N
Callao *	NQG	do	300,600	PG	N
Choctaw *	NTV	do	300,600	PG	N
City of Wilmington ⁴	WQC	Marconi, 400	300,600	PG	X
Concord *	NQH	U. S. Navy	300,600	PG	N
Constellation *	NEY	do	300,600	PG	N
Cumberland *	NSZ	do	300,600	PG	N
Cuyama *	NOD	do	300,600	PG	N
Dahlgren *	NVY	do	300,600	PG	N
De Long *	NWB	do	300,600	PG	N
Elfrieda *	NEV	do	300,600	PG	N
Fish Hawk *	NFV	do	300,600	PG	N
Foote *	NWF	do	300,600	PG	N
Fox *	NWJ	do	300,600	PG	N
Frederick *	NJS	do	300,600	PG	N
Granite State *	NNZ	do	300,600	PG	N
Hartford *	NGV	do	300,600	PG	N
Hawk *	NSM	do	300,600	PG	N
Hercules *	NTW	do	300,600	PG	N
Huntington *	NWG	do	300,600	PG	N
Huntress *	NSN	do	300,600	PG	N
Idaho *	NHN	do	300,600	PG	N
Intrepid *	NFY	do	300,600	PG	N
Iwana *	NTY	do	300,600	PG	N
James McGee ⁵	KTP	Marconi.	300,600	PG	
J. W. Thompson ⁶	KXT	do	300,600	PG	
Lackawanna ⁷	KOP	do	300,600	PG	
Lancaster *	NEW	U. S. Navy	300,600	PG	N

* Rates, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by the U. S. Naval Communication Service, Radio, Va. Government, owner of vessel.

¹ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.

² Range, 100; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Bay Steamship Co. of America (Ltd.), owner of vessel.

³ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Brynhilda Shipping Corporation, owner of vessel.

⁴ Range, 150; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Alexander Sprunt & Son, owner of vessel.

⁵ R. Lawrence Smith (Inc.), owner of vessel.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS—Continued.

Vessel.	Call signal.	System.	Wave lengths.	Service.	Hours.
Macasoit *	NUB	U. S. Navy.	300, 600.	PG	N
May 1	KZI	Marconi	300, 600.	PG	N
Mississippi *	NKE	U. S. Navy.	300, 600.	PG	N
Modoc *	NUD	do	300, 600.	PG	N
Mohave *	NTD	do	300, 600.	PG	N
Mohawk *	NUE	do	300, 600.	PG	N
Mohegan *	NZA	do	300, 600.	PG	N
Mundale 2	KUI	Marconi	300, 600.	PG	N
N-1 *	NZE	U. S. Navy.	300, 600.	PG	N
N-2 *	NZF	do	300, 600.	PG	N
N-3 *	NZG	do	300, 600.	PG	N
N-4 *	NZH	do	300, 600.	PG	N
N-5 *	NZI	do	300, 600.	PG	N
N-6 *	NZJ	do	300, 600.	PG	N
N-7 *	NZK	do	300, 600.	PG	N
Narkeeta *	NUF	do	300, 600.	PG	N
Oneida *	NSO	do	300, 600.	PG	N
Pawnee *	NUH	do	300, 600.	PG	N
Pawtucket *	NUJ	do	300, 600.	PG	N
Penacook *	NUK	do	300, 600.	PG	N
Pentucket *	NUL	do	300, 600.	PG	N
Pocahontas *	NOU	do	300, 600.	PG	N
Powhatan *	NUP	do	300, 600.	PG	N
Pueblo *	NDN	do	300, 600.	PG	N
Relief *	NHK	do	300, 600.	PG	N
Rocket *	NUT	do	300, 600.	PG	N
Rodgers *	NWT	do	300, 600.	PG	N
Samoset *	NUU	do	300, 600.	PG	N
Schley *	NKT	do	300, 600.	PG	N
Seattle *	NWE	do	300, 600.	PG	N
Sebago *	NUV	do	300, 600.	PG	N
Shaw *	NKU	do	300, 600.	PG	N
Shubrick *	NWU	do	300, 600.	PG	N
Sioux *	NWV	do	300, 600.	PG	N
Somers *	NWV	do	300, 600.	PG	N
Southery *	NJY	do	300, 600.	PG	N
Standish *	NUY	do	300, 600.	PG	N
Surveyor *	NQU	do	300, 600.	PG	N
Sylvia *	NSS	do	300, 600.	PG	N
Tecumseh *	NUZ	do	300, 600.	PG	N
Thornton *	NWX	do	300, 600.	PG	N
Tillamook *	NWW	do	300, 600.	PG	N
Tingey *	NWY	do	300, 600.	PG	N
Traffic *	NVA	do	300, 600.	PG	N
Transfer *	NVB	do	300, 600.	PG	N
Triton *	NVC	do	300, 600.	PG	N
Unadilla *	NVD	do	300, 600.	PG	N
Waban *	NVH	do	300, 600.	PG	N
Wahnetta *	NVI	do	300, 600.	PG	N
Wanda *	NWZ	do	300, 600.	PG	N
Wellington 3	KMR	Marconi	300, 600.	PG	N
Wm. G. Warden 4	KNF	do	300, 600.	PG	N
Wompatuck *	NVJ	U. S. Navy.	300, 600.	PG	N

¹ Rate, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by J. R. De Lamar, owner of vessel, yacht.

² Munson Steamship Co., owner of vessel.

³ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Cook-Cummer Steamship Co., owner of vessel.

⁴ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.

SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Call signal.	Vessel.	Call signal.	Vessel.	Call signal.	Vessel.
KIO	Brynhilda.	NSY	Boxer.	NVY	Dahlgren.
KMR	Wellington.	NSZ	Cumberland.	NWB	De Long.
KNF	Wm. G. Warden.	NTH	Accomac.	NWE	Seattle.
KOP	Lackawanna.	NTJ	Active.	NWF	Foote.
KPS	Benjamin Brewster.	NTM	Alice.	NWG	Huntington.
KTP	James McGee.	NTN	Apache.	NWJ	Fox.
KUJ	Mundale.	NTQ	Mohave.	NWT	Rodgers.
KXS	Britannia.	NTV	Choctaw	NWU	Shubrick.
KXT	J. W. Thompson.	NTW	Hercules.	NWV	Somers.
KZI	May.	NTY	Iwana.	NWW	Tillamook.
NDN	Pueblo.	NUB	Massasoit.	NWX	Thornton.
NEV	Elfreda.	NUD	Modoc.	NWY	Tingey.
NEW	Lancaster.	NUE	Mohawk.	NWZ	Wanda.
NEY	Constellation.	NUF	Narkeeta.	NXB	A-2.
NFV	Fish Hawk.	NUH	Pawnee.	NXC	A-3.
NFY	Intrepid.	NUJ	Pawtucket.	NXD	A-4.
NGC	Boston.	NUK	Penacook.	NXE	A-5.
NGV	Hartford.	NUL	Pentucket.	NXF	A-6.
NHK	Relief.	NUP	Powhatan.	NXG	A-7.
NHN	Idaho.	NUT	Rocket.	NXH	B-1.
NJS	Frederick.	NUU	Samoset.	NXI	B-2.
NJY	Southery.	NUV	Sebago.	NXJ	B-3.
NKE	Mississippi.	NUW	Sioux.	NXK	C-1.
NKT	Schley.	NUY	Standish.	NXL	C-2.
NKU	Shaw.	NUZ	Tecumseh.	NXM	C-3.
NNZ	Granite State.	NVA	Traffic.	NXN	C-4.
NOD	Cuyama.	NVB	Transfer.	NXO	C-5.
NOU	Pocahontas.	NVC	Triton.	NZA	Mohegan.
NQG	Callao.	NVD	Unadilla.	NZE	N-1.
NQH	Concord.	NVH	Waban.	NZF	N-2.
NQU	Surveyor.	NVI	Wahneta.	NZG	N-3.
NSM	Hawk.	NVJ	Wompatuck.	NZH	N-4.
NSN	Huntress.	NVO	Aileen.	NZI	N-5.
NSO	Oneida.	NVU	Bagley.	NZJ	N-6.
NSP	Arapahoe.	NVV	Barney.	NZK	N-7.
NSS	Sylvia.	NVW	Biddle.	WQC	City of Wilmington.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, only.]

Station.	Call signal.	Wave lengths.	Serv-ice.	Hours.	Station controlled by—
Bar Harbor, Me.	1ZI	200, 300, 425, 600.	P	X	Arthur H. Lawford.
Manhattan, Kans.	9YV	300, 425.	P	X	Kansas State Agricultural College.
Philadelphia, Pa.	3ZO	200, 300, 425, 600.	P	X	Maynard C. Morris.
San Bernardino, Cal.	6YP	200, 500.	P	X	Y. M. C. A.
Superior, Wis.	9ZO	200, 300, 425, 600.	P	X	F. W. Keeler.

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this Bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name = Name of station.

G. loc = Geographical location: O = west longitude, N = north latitude.

Call = Call letters assigned.

System = Radio system used and sparks per second.

Range = Normal range in nautical miles.

W. L. = Wave lengths assigned: Normal wave lengths in italics.

Service=Nature of service maintained:

PG=General public.

PR=Limited public.

P=Private.

O=Government business exclusively.

Hours =Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m. (12m=midday).

s=p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

CAPE ST. ELIAS, ALASKA.—Strike out all particulars.

KENSINGTON, ALASKA.—G. loc., O. 135° 06' 54", N. 58° 52' 06"; range, 100-250; system, Marconi, 480; W. L., 300, 600, 1650; service, PG; hours, 15-minute periods commencing at 9m, 1s, and 7s; rates, 6 c. per word 60 c. minimum per radiogram. Notes, Radio station operated and controlled by the Marconi Co. The station also communicates with Juneau and Sitka, Alaska; rate, 6 c. per word 60 c. minimum per radiogram, domestic count.

LEWISTON, MONT.—Name, Lewistown, Mont.; W. L., 300, 600, 1600.

WAHIAWA, ISLAND OF OAHU, HAWAII.—Range, 400; W. L., 300, 550, 600, 750; hours, for PG service, N, for special interisland service, 7m-12m, 1s-5.30s, for service with Tutuila and Apia, Samoa, 8s-2m; rates, change rate to Apia and Papeete to read: Rate to Apia, 50 c. per word no minimum, rate to Tutuila, 10 c. per word \$1 minimum per radiogram. Rate for PG service, 10 c. per word \$1 minimum per radiogram. Notes, Radio station operated and controlled by the Mutual Telephone Co. (Ltd.). The station conducts special interisland service with Kawaihae, Lahaina, and Lihue, Hawaii, and also communicates with Tutuila and Apia, Samoa.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ADMIRAL DEWEY.—Note, Radio station operated and controlled by the Pacific Steamship Co., charterer of vessel. Pacific-Alaska Navigation Co., owner of vessel.

ADMIRAL EVANS.—Note, Radio station operated and controlled by the Pacific Steamship Co., charterer of vessel. Pacific-Alaska Navigation Co., owner of vessel.

ADMIRAL FARRAGUT.—Note, Radio station operated and controlled by the Pacific Steamship Co., charterer of vessel. Pacific-Alaska Navigation Co., owner of vessel.

ADMIRAL GOODRICH.—Note, Radio station operated and controlled by the Pacific Steamship Co., charterer of vessel. Pacific-Alaska Navigation Co., owner of vessel.

ADMIRAL SCHLEY.—Note, Radio station operated and controlled by the Pacific Steamship Co., charterer of vessel. Pacific-Alaska Navigation Co., owner of vessel.

ADMIRAL WATSON.—Note, Radio station operated and controlled by the Pacific Steamship Co., charterer of vessel. Pacific-Alaska Navigation Co., owner of vessel.

BRAMELL POINT.—Range, 150; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X. C. A. CANFIELD.—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600.

CALIFORNIA (NCZ).—Call, NDF.

CAMINO.—Strike out all particulars.

CHICAGO (WFI).—Strike out all particulars.

CITY OF SEATTLE.—Notes, Radio station operated and controlled by the Marconi Co. Pacific Steamship Co., charterer of vessel. Pacific-Alaska Navigation Co., owner of vessel.

COLORADO (NDN).—Strike out all particulars.

EL OCCIDENTE.—System, Marconi, 1,000; W. L., 300, 450, 600.

- EL VALLE.—System, Marconi, 480; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- GUANTANAMO.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- JOSEPH R. PARROTT.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, 4 c. per word 40 c. minimum per radiogram.
- MARYLAND.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X. Notes, Radio station operated and controlled by the Marconi Co. Crew Levick Co., owner of vessel.
- MARYLAND (NJS).—Strike out all particulars.
- MEXICAN.—Hours, N.
- MILLINOCKET.—System, Marconi, 480; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- NAVAHOE.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- NAVAJO (WNJ).—Range, 300; system, Marconi, 1,000; W. L., 300, 450, 600.
- NORMAN BRIDGE.—Rates, North and South American service, 4 c. per word, 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- OREGON (WOC).—Notes, Radio station operated and controlled by the Marconi Co. Wilson Bros. Co., owner of vessel.
- PAULSBORO.—Notes, Radio station operated and controlled by the Marconi Co. Vacuum Oil Co., owner of vessel.
- PEARL SHELL.—Range, 250; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X.
- PERE MARQUETTE.—W. L., 300, 500, 600. Notes, Radio station operated and controlled by the Marconi Co. Pere Marquette Railroad Co., owner of vessel.
- PERE MARQUETTE 17.—W. L., 300, 500, 600. Notes, Radio station operated and controlled by the Marconi Co. Pere Marquette Railroad Co., owner of vessel.
- PERE MARQUETTE 18.—W. L., 300, 500, 600. Notes, Radio station operated and controlled by the Marconi Co. Pere Marquette Railroad Co., owner of vessel.
- PERE MARQUETTE 19.—W. L., 300, 500, 600. Notes, Radio station operated and controlled by the Marconi Co. Pere Marquette Railroad Co., owner of vessel.
- PERE MARQUETTE 20.—W. L., 300, 500, 600. Notes, Radio station operated and controlled by the Marconi Co. Pere Marquette Railroad Co., owner of vessel.
- PRESIDENT.—Notes, Radio station operated and controlled by the Marconi Co. Pacific Coast Co., owner of vessel.
- RESOLUTE.—Range, 200; system, De Forest, 240; W. L., 300, 600; service, PG; hours, X; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Merritt & Chapman Derrick & Wrecking Co., owner of vessel.
- SENATOR.—Notes, Radio station operated and controlled by the Marconi Co. Pacific Steamship Co., charterer of vessel. Pacific-Alaska Navigation Co., owner of vessel.
- SEWARD.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Notes, Radio station operated and controlled by the Seward Navigation Co., owner of vessel.
- SPOKANE.—Notes, Radio station operated and controlled by the Marconi Co. Pacific Steamship Co., charterer of vessel. Pacific-Alaska Navigation Co., owner of vessel.
- TENNESSEE (NUG).—Strike out all particulars.
- UMATILLA.—Notes, Radio station operated and controlled by the Marconi Co. Pacific Steamship Co., charterer of vessel. Pacific-Alaska Navigation Co., owner of vessel.
- WASHINGTON (NWE).—Strike out all particulars.
- WESTERN STATES.—W. L., 300, 440, 500, 600; hours, N.
- WEST VIRGINIA (NWG).—Strike out all particulars.
- WICO.—Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

MISCELLANEOUS.

COMMERCIAL RADIO OPERATORS LICENSED DURING MONTH OF
OCTOBER, 1916.*Extra first grade.*

Date.	Licensee.	Address.	Serial No.	Where issued. ¹
18	Sibley, Eugene	1125 E. Capitol St., Washington, D. C.	54	Washington.
24	Abrams, George E.	438 W. 23d St., New York, N. Y.	57	Brooklyn. ²
27	Schindler, Emil R.	U. S. S. Ranger, Boston, Mass.	56	Washington.
24	Scott, Carl A.	S. S. Sizala, New York, N. Y.	55	Brooklyn. ²
19	Young, Leonard P.			

First grade.

9	Abbey, Harold	R. F. D. No. 1, Eugene, Oreg.	14134	Seattle.
24	Abrams, George E.	S. S. H. M. Flagler, Key West, Fla.	14161	New Orleans.
7	Acree, Charles H.	U. S. Naval Radio Station, New Orleans, La.	12300	Do.
27	Allen, John W.	236 Hale St., Beverly, Mass.	12183	Baltimore.
17	Ault, Arthur K.	1152 Columbia Ave., Baltimore, Md.	12184	Do.
26	Austin, Hervey G.	1036 Polk St., San Francisco, Cal.	13905	San Francisco.
30	Barkley, Patrick J.	S. S. Heredia, New Orleans, La.	14163	New Orleans.
18	Bauchou, Leon J.	Mayfield, Cal.	12398	San Francisco.
28	Beckerman, Benjamin.	107 Herze St., Brooklyn, N. Y.	14091	New York.
28	Beckerman, Michael.	do.	14092	Do.
31	Bermingham, James L.	54 A St., Waveland, Mass.	14271	Boston.
21	Bervitt, Edwin R.	3914 3d St., San Diego, Cal.	13901	San Francisco.
16	Bigelman, Herbert C.	139 Springfield Ave., Rutherford, N. J.	12966	Norfolk. ²
25	Bodin, Henry.	5 Fella Pl., San Francisco, Cal.	13903	San Francisco.
6	Bolt, Arthur L.	4901 Budlong Ave., Los Angeles, Cal.	12393	Do.
3	Brede, Erwin F.	55 Melbourne Ave., Detroit, Mich.	13726	Detroit.
16	Brusseau, Charles J.	262 Vallette St., New Orleans, La.	14157	New Orleans.
4	Burgess, Hubert A.	7801 44th St. SW., Seattle, Wash.	14133	Seattle.
26	Campbell, Alexander.	204 Perry St., Cape May, N. J.	12186	Baltimore.
30	Carpenter, Irving T.	416 Public St., Providence, R. I.	14093	New York.
24	Cawman, David L.	1531 Sewall Ave., Asbury Park, N. J.	14088	Do.
18	Copak, George J.	509 S. 10th St., Newark, N. J.	14911	Brooklyn. ²
18	Crum, Arles A.	363 W. 58th St., New York, N. Y.	14909	Do.
18	Dillon, Joseph A.	407 S. Claiborne Ave., New Orleans, La.	14908	Do.
16	Doughty, Dennis R.	153 E. 86th St., New York, N. Y.	14906	Do.
31	Dunlap, William T.	S. S. Alaska, Pier 2, Seattle, Wash.	14139	Seattle.
10	Ellis, Homer D.	28 Winslow Rd., Brookline, Mass.	14268	Boston.
21	Estrada, Miss Maria D.	11th and N Sts. NW., Washington, D. C.	12015	Washington.
2	Ferguson, George B.	24 Cottage St., Bayonne, N. J.	14904	Brooklyn. ²
16	Folsom, Harold P.	445 Central St., Winchendon, Mass.	14270	Boston.
2	Ford, Schuyler R.	396 E. 16th St., Brooklyn, N. Y.	14905	Brooklyn. ²
27	Forsyth, James F.	108 Prospect St., Somerville, Mass.	14090	New York.
10	Fox, Irving A.	Piedmont Park, Oakland, Cal.	12394	San Francisco.
20	Gaskey, Sigmund.	73 E. 30th St., Bayonne, N. J.	14160	New Orleans.
19	Gilbert, Harry L.	714 Denny Way, Seattle, Wash.	14135	Seattle.
23	Grimshaw, Herbert R.	55 Wood St., Rutherford, N. J.	14914	Brooklyn. ²
19	Guy, Raymond.	342 Broadway, Tottenville, N. Y.	14912	Do.
23	Hallett, Gena C.	4034 Latona Ave., Seattle, Wash.	14138	Seattle.
5	Harrison, Percy W.	0225 Ellis Ave., Chicago, Ill.	13729	Chicago.
10	Hassler, Bert R.	818 E. 4th St., Santa Ana, Cal.	12396	San Francisco.
20	Haverkamp, Herman O.	2200 Marengo St., New Orleans, La.	14159	New Orleans.
26	Hellig, David J.	1421 Arch St., Philadelphia, Pa.	12185	Baltimore.
10	Hendrix, Paul A.	1106 Bush St., San Francisco, Cal.	12395	San Francisco.
18	Hornung, Julius L.	203 E. 64th St., New York, N. Y.	14907	Brooklyn. ²
26	La Rue, Lester J.	179 Marcy Ave., Brooklyn, N. Y.	14916	Do.
10	Lee, James G.	Box 62, Vancouver, Wash.	14137	Seattle.
20	Lockette, Lester.	Care of Federal Telegraph Co., San Francisco, Cal.	14136	Do.
17	Lohry, Ross B.	1921 Irving Ave., East Oakland, Cal.	12397	San Francisco.
19	Loomis, Thomas T.	Blencoe, Iowa.	12400	Do.
26	McDonald, Edward F.	15 Beacon St., Clinton, Mass.	14089	New York.
31	Marshall, Emanuel J.	402 E. 83d St., New York, N. Y.	14918	Brooklyn. ²
18	McHe, John A.	568 Waller St., San Francisco, Cal.	12399	San Francisco.
23	Morrell, Arthur C.	Navy Y. M. C. A., Brooklyn, N. Y.	14915	Brooklyn. ²
3	Pardridge, Clarence R.	521 Nimons St., Saginaw, Mich.	13728	Detroit.
26	Peterson, Kenneth.	1223 West Ave., Eureka, Cal.	13904	San Francisco.
6	Philbrook, Robert G.	1 Linden Ave., Greenwood, Mass.	14266	Boston.
3	Risley, Warren B.	96 Marshall St., Conneaut, Ohio.	13727	Detroit.
27	Roberts, George F. ³	Stewart Hotel, San Francisco, Cal.	12388	San Francisco.
10	Salter, John R.	89 St. James Ave., Boston, Mass.	14267	Boston.
31	Schmitt, Lawrence R.	S. S. Creole, New York, N. Y.	14094	New York.
18	Schneider, Frank A.	25 Ridgewood Ave., Newark, N. J.	14910	Brooklyn. ²
24	Schneider, Sam.	765 E. 160th St., New York, N. Y.	14087	New York.

¹ All licenses issued by radio inspectors of the Department of Commerce unless otherwise indicated.² License issued by radio examining officer, Navy Department.³ Licensed during month of September, papers being received at Bureau too late for publication in November Bulletin.

COMMERCIAL RADIO OPERATORS LICENSED DURING THE MONTH OF OCTOBER, 1916—continued.

First grade—Continued.

Date.	Licensee.	Address.	Serial No.	Where issued. ¹
30	Sikes, Alvin R.	Wayne, Mich.	13730	Chicago.
31	Smith, Edmund F.	659 Haight St., San Francisco, Cal.	13906	San Francisco.
25	Spradley, Albert H.	849 Calder Ave., Beaumont, Tex.	14102	New Orleans.
19	Stevens, Charles E.	Care of Standard Oil Co., Baton Rouge, La.	14158	Do.
26	Wimpfheimer, Gustave R.	1219 Wheeler Ave., New York, N. Y.	14917	Brooklyn. ²
18	Young, Ross W.	25 Elm St., New York, N. Y.	14086	New York.

Second grade.

5	Beechel, George H. J.	220 78th St., Brooklyn, N. Y.	13824	Brooklyn. ²
18	Coombs, George T.	Castine, Me.	12070	Boston.
27	Foster, Richard H.	Miami, Fla.	12902	Key West. ²
25	Herndon, Landon C. ³	409 Middle St., Portsmouth, Va.	13055	Fort Monroe, Va. ⁴
23	Hill, Claude N.	Fort McKinley, Portland, Me.	12071	Boston.
5	Quong, Moy B.	172 2d St., Milwaukee, Wis.	12341	Chicago.
10	Wihl, Otto H.	72 Woodward Ave., San Francisco, Cal.	13272	San Francisco.

¹ All licenses issued by radio inspectors of Department of Commerce unless otherwise indicated.² License issued by radio examining officer, Navy Department.³ Licensed during month of September, papers being received at Bureau too late for publication in November Bulletin.⁴ License issued by radio examining officer, War Department.

RADIO SERVICE PERSONNEL.

H. C. Gawler, who has been serving as captain in the Signal Corps, Massachusetts National Guard, on the Mexican border, has returned to his duties as radio inspector at Boston, Mass.

Charles Blankenship, assistant radio inspector, who has been in charge of the first district during the absence of Radio Inspector H. C. Gawler, has been granted annual leave, at the expiration of which he will be assigned to the port of Norfolk, Va.

Ellery W. Stone, assistant radio inspector at San Francisco, Cal., is making an extended inspection trip through southern California and points in New Mexico and Arizona.

Otto R. Redfern, formerly manager of the Duluth (Minn.) station of the Marconi Wireless Telegraph Co. of America, has been appointed an assistant radio inspector in the service of the Bureau at New York, N. Y.

Joseph H. Hallock, of Underwood, Wash., has been appointed assistant radio inspector in the service of the Bureau and has been temporarily assigned to Norfolk, Va. Upon the assignment of Assistant Radio Inspector Blankenship to the port of Norfolk, Mr. Hallock will be assigned to duty in the fourth and fifth districts.

The temporary appointment of H. D. Hayes as assistant radio inspector at San Francisco, Cal., has been extended for a period of three months.

NEW INTERNATIONAL LIST.

The Berne bureau has announced the completion of the fourth edition of the Liste Alphabetique des Indicateurs D'Appel (Alphabetical List of Call Letters) of the radio stations of the world.

This publication may be procured from the Director, International Bureau of the Telegraph Union, Radiotelegraphic Service, Berne,

Switzerland, at the price of 1 franc 30 centimes per copy, plus 35-centimes postage. Remittances should be made by international postal money orders.

REGULATION OF RADIO APPARATUS IN CANADIAN TERRITORIAL WATERS.

The following extracts from the Canadian Radiotelegraph Act and Regulations concerning the operation of radio equipments on vessels in Canadian territorial waters are published for the information and guidance of masters and radio operators of American vessels visiting Canadian ports.

73. *Superfluous signals.*—The transmission of superfluous signals by any ship or coast station is absolutely prohibited; trials and practices are forbidden except under such circumstances as to preclude the possibility of interference with other stations.

103. *Ship stations in Canadian territorial waters.*—The radiotelegraph stations on board ships (other than H. M. ships of war or Canadian Government vessels) shall not be worked while such ships are within the territorial waters of Canada, unless specific permission is granted therefor by the controlling Canadian coast stations for the locality, and then only provided such working does not interfere with the operation of any coast station established in Canada, and that the provisions of the Radiotelegraph Convention of London, 1912, and the Service Regulations annexed thereto, are strictly observed.

104. *Ship stations in Canadian harbours.*—(a) The radiotelegraph stations on board ships (other than H. M. ships of war or Canadian Government vessels) shall not be worked whilst such ships are within a harbour of the Dominion of Canada.

(b) For the proper enforcement of the above, ships of British register in Canadian harbours must completely disconnect their aerial wires from their radio apparatus, the ends of such wires being suspended entirely clear of the radiotelegraph cabin, preferably from the main rigging, in such a manner as to show they are properly disconnected.

(c) Ships of foreign register in a Canadian harbour must (subject to the provisions of the following subsection (d)) take down their aerial wires completely and disconnect the same from their radiotelegraph apparatus.

(d) Ships of foreign register remaining in a Canadian harbour for less than twelve-hours may, at the discretion of the competent naval authority, be permitted to leave their aerials up, provided the same are disconnected in accordance with the provisions of subsection (b) of this regulation.

WARNING TO RADIO OPERATORS.

The attention of all radio operators on American vessels engaged in foreign trade is invited to Article VI of the London convention and paragraph 209, page 74, of the regulations of the Department, prohibiting the transmission of superfluous signals, and to Article XXXV of the London convention, requiring the transmission of radiograms, except as outlined in that article, to the nearest coastal station.

The Department has recently received several complaints from foreign Governments of interference caused by the radio stations on board vessels of the United States while in or near foreign territory, the greater part of which has been caused by the attempts of radio operators to transmit long distances and by the transmission of superfluous signals, in violation of the above regulations.

All radio operators are warned that they must obey the international regulations and the regulations of the Department, especially as regards interference with the operation of foreign radio stations, and any operator found guilty of willfully interfering with the operation of other stations may suffer the suspension or revocation of his operator license.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, January 1, 1917—No. 25.

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	System.	Wave lengths.	Service.	Hours.
Cape Cod, Mass. ¹	NAE	U. S. Navy.....		O	N
Craftonville, Cal. ²	KJK	Massic, 100.....	1,610....	Limited commercial	X
King Cove, Alaska ³	KJK			do.....	
San Francisco, Cal. ⁴	NPG	U. S. Navy.....		O	N

¹ G. loc., O 70° 03' 54", N. 42° 02' 22". Radio station operated and controlled by the United States Naval Communication Service, Radio, Va.

² G. loc., O 117° 02' 30", N. 34° 05' 10"; range, 250. Radio station operated and controlled by the Southern California Edison Co. The station is limited to communication with stations of the Southern California Edison Co. and Southern Sierra Power Co. on business of a private nature.

³ Radio station operated and controlled by the Pacific-American Fisheries Co.

⁴ G. loc., O 122° 22' 02", N. 37° 48' 30". Radio station operated and controlled by the United States Naval Communication Service, Radio, Va.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Service.	Hours.
Alpena ¹	WCS	Marconi.....	300,600.....	PG	
Ann Arbor No. 6 ²	WDQ	do.....	300,600.....	PG	
Commodore ³	WFZ				
Edward Luckenbach.....	KGQ	Kilbourne & Clark.....	300,600.....		
Fordean.....	KRQ				
F. Q. Barstow ⁴	KNQ	Marconi.....	300,600.....	PG	
Huron ⁵	WCH	do.....	300,600.....	PG	
Marina ⁶	KXU	Marconi, 1,000.....	300,450,600..	PG	N
Mauli ⁷	WMR	Marconi.....	300,600.....		
Nirvana ⁸	KVK	do.....	300,600.....	PG	
Paul Jones ⁹	KVU	do.....	300,600.....	PG	
Pennant ¹⁰	KME	do.....	300,600.....	PG	
Samuel Mitchell ¹⁰	WEJ	do.....	300,600.....	PG	
Velero ¹¹	WHV	Composite.....	300.....	PG	X
W. H. Tilford ⁴	KPD	Marconi.....	300,600.....	PG	
Wyandotte ¹	WCO	do.....	300,600.....	PG	

¹ Rates, 2 c. per word 20 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Wyandotte Transportation Co., owner of vessel.

² Rates, 2 c. per word 20c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Ann Arbor Railroad Co., owner of vessel.

³ Illinois Naval Battalion, owner of vessel.

⁴ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Standard Oil Co. of New Jersey, owner of vessel.

⁵ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Bull Insular Steamship Co., owner of vessel.

⁶ Matson Navigation Co., owner of vessel.

⁷ Rates, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Rodman Wanamaker, owner of vessel, yacht.

⁸ Radio station operated and controlled by James W. Elwell & Co., owner of vessel.

⁹ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Pierce Oil Corporation, owner of vessel.

¹⁰ Rates, 2 c. per word 20 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Huron Transportation Co., owner of vessel.

¹¹ Range 50; rates, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by G. Allan Hancock, owner of vessel, yacht.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
KGQ	Edward Luckenbach..... b	NAE	Cape Cod, Mass..... c
KJK	King Cove, Alaska..... c	NPG	San Francisco, Cal..... c
KJQ	Craftonville, Cal..... c	WCH	Huron..... b
KME	Fennant..... b	WCO	Wyandotte..... b
KNQ	F. Q. Barstow..... b	WCS	Alpena..... b
KPD	W. H. Tilford..... b	WDQ	Ann Arbor No. 6..... b
KRU	Forndonian..... b	WEJ	Samuel Mitchell..... b
KVU	Paul Jones..... b	WFZ	Commodore..... b
KXU	Marina..... b	WHV	Velero..... b
KYK	Nirvana..... b	WMR	Maui..... b

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Buffalo, N. Y.....	8ZJ	200, 425.....	P	X	Edward C. Wahl.
Buffalo, N. Y.....	8ZP	200, 300, 425, 600.....	P	X	W. D. Woodcock.
Charlestown, R. I.....	1XW	200, 300, 425, 600.....	P	X	Ralph C. Watrous.
Chicago, Ill.....	9ZN	200, 300, 425, 600.....	P	X	Ralph H. G. Mathews.
Fresno, Cal.....	5ZD	200, 425.....	P	X	Robert C. Denny.
Montclair, N. J.....	2ZE	200, 325.....	P	X	Paul F. Godley.
University, Va.....	3YV	200, 350, 425.....	P	X	University of Virginia.
Winfield, L. I., N. Y.....	2XP	300, 450, 600, 1000, 1600, 3000.....	P	X	Louis G. Pacent.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1XW	First district: Charlestown, R. I.....	5ZD	Fifth district: Fresno, Cal.
2XP	Second district: Winfield, Long Island, N. Y.....	8ZJ	Eighth district: Buffalo, N. Y.
2ZE	Montclair, N. J.....	8ZP	Buffalo, N. Y.
3YV	Third district: University, Va.....	9ZN	Ninth district: Chicago, Ill.

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this Bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.

G. loc =Geographical location: O=west longitude, N=north latitude.

Call =Call letters assigned.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths assigned: Normal wave lengths in italics.

Service=Nature of service maintained:

PG=General public.

PR=Limited public.

P=Private.

O=Government business exclusively.

Hours =Hours of operation:

N=Continuous service.

X=No regular hours.

m=a. m. (12m=midday).

s=p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

NEW ORLEANS, LA. (WHK).—Hours, 7.15m–8m, 8.40m–9m, 10.15m–10.55m, 11.40m–12m, 1.15s–2s, 3.15s–4s, 5.15s–6s, 8.15s–8.55s, 10.15s–11s.

NORTH TRURO, MASS.—Strike out all particulars.

YERBA BUENA, CAL.—Strike out all particulars.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

DADE.—Strike out all particulars.

EDWARD L. DOHENY.—W. L., 300, 450, 600.

GOVERNOR.—System, Marconi, 400. Note, Radio station operated and controlled by the Marconi Co. Pacific Coast Co., owner of vessel. Pacific Steamship Co., charterer of vessel.

IAQUA.—Note, Radio station operated and controlled by the Marconi Co. Fred D. Parr (Parr-McCormick Steamship Co.), owner of vessel.

JOSEPHINE.—Strike out all particulars.

LACKAWANNA.—Range, 150; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. R. Lawrence Smith (Inc.), owner of vessel.

MUNDALE.—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. Munson Steamship Co., owner of vessel.

NELSON.—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.

RELIEF (KRJ).—Range, 200; system, Kilbourne & Clark, 1,000; W. L., 300, 450, 600.

ROSE CITY.—System, Marconi, 240.

ROYAL ARROW.—Range, 300; system, Marconi, 1,000; hours, N.

SAN MATEO.—System, Composite, 1,000; rates, 8 c. per word 80 c. minimum per radiogram.

SIBIRIA.—Strike out all particulars.

ZELANDIA.—Note, Radio station operated and controlled by the National Electric Signaling Co. Universal Transportation Co., owner of vessel.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, only.]

FRUITVALE, CAL.—Radio station operated and controlled by the National Radio Co.

LEONIA, N. J.—Strike out all particulars.

MADISON, WIS.—W. L., 425, 1700, variable.

NEW ROCHELLE, N. Y.—W. L., 200, 350, 425.

ROCKFORD, ILL.—Strike out all particulars.

SAN FRANCISCO, CAL. (6XO).—Radio station operated and controlled by the National Radio Co.

WATCHAUG POND, R. I.—Strike out all particulars.

MISCELLANEOUS.

COMMERCIAL RADIO OPERATORS LICENSED DURING MONTH OF
NOVEMBER, 1916.*Extra first grade.*

Date.	Licensee.	Address.	Serial No.	Where issued. ¹
27	Jones, William H.	335 8th St., Lorain, Ohio.	59	Cleveland.
9	*Voelker, Raymond.	65 W. 107th St., New York, N. Y.	58	Brooklyn. ²

First grade.

5	Austin, Russell F.	210 3d St., Riverside, Cal.	13853	Los Angeles.
21	Baldwin, Edward.	623 Crawford Ave., Dixon Ill.	13738	Chicago.
9	*Barker, Charles R.	712 Gravier St., New Orleans, La.	14165	New Orleans.
21	Barron, William T.	153 Indiana Ave., Valparaiso, Ind.	13739	Chicago.
24	Bartlett, Dexter S.	1107 Columbia St., Seattle, Wash.	14147	Seattle.
16	*Batchelder, Isaac H.	409 Jefferson Ave., Bristol, Pa.	12914	Philadelphia. ³
16	*Beane, Edwin A.	Fort Morgan, Ala.	14170	New Orleans.
6	Beraldo, Dewey.	943 E. 10th St., Los Angeles, Cal.	13857	Los Angeles.
17	Bergen, Matthew L.	94 Vanderveer St., Brooklyn, N. Y.	14955	New York.
9	Bernhard, Arthur L.	541 West St., Brooklyn, N. Y.	14854	Do.
9	Bisciotto, Bernard J.	608 Carpenter St., Philadelphia, Pa.	14923	Brooklyn. ²
23	*Black, Elmer M.	10 Cliff St., New London, Conn.	14273	Boston.
2	Bode, Hugo P.	6315 Beacon Ave., Seattle, Wash.	14140	Seattle.
17	Bossen, John A.	110 E. 41st St., New York, N. Y.	14954	New York.
29	Bowen, Walter.	2110 Catrella Ave., Los Angeles, Cal.	13859	Los Angeles.
14	*Bowers, Clio.	1014 Lime Ave., Long Beach, Cal.	13915	San Francisco.
10	*Brady, Albert E.	San Francisco, Cal.	13912	Do.
7	Carrier, Roy D.	Care Tropical Radio Telegraph Co., New Orleans, La.	14164	New Orleans.
14	*Chambers, Fred B.	138 Park Row, New Orleans, La.	14169	Do.
28	*Churchill, John R.	503 W. 169th St., New York, N. Y.	14174	Do.
2	Clement, Luther.	156 Locust Ave., Valparaiso, Ind.	13732	Chicago.
11	*Coffin, Richard.	560 Houston St., Mobile, Ala.	14166	New Orleans.
24	*Cohen, Arthur.	560 Beck St., New York, N. Y.	14171	Do.
29	*Conkling, Elliott C.	1305 Josephine St., New Orleans, La.	14175	Do.
4	Cooper, C. B.	4018 Eastern Ave., Seattle, Wash.	14145	Seattle.
21	*Crous, Charles C.	480 First St., San Francisco, Cal.	13907	San Francisco.
1	*Darcy, Charles B.	89 Suydam St., Brooklyn, N. Y.	14919	Brooklyn. ²
4	Darlington, Albert.	511 Park Ave., New York, N. Y.	14929	Do. ³
3	Dillon, Lyle.	317 S. Norton Ave., Los Angeles, Cal.	13852	Los Angeles.
10	*Dillon, Wm. F.	72 Division St., Newport, R. I.	14958	New York.
10	*Doherty, Frank J.	724 Marcy Ave., Brooklyn, N. Y.	14957	Do.
27	*Downey, William E.	Y. M. C. A., Los Angeles, Cal.	13863	Los Angeles.
3	*Driver, Lloyd C.	25 Elm St., New York, N. Y.	14098	New York.
1	*Duna, Roman.	437 Ogden Ave., Jersey City, N. J.	14097	Do.
4	Eddy, John L., jr.	2202 Q St. NW, Washington, D. C.	12016	Washington.
21	Emmerson, Frank V.	449 High St., Portsmouth, Va.	12967	Norfolk. ²
14	*Erich, William J.	546 N. 4th St., San Jose, Cal.	13914	San Francisco.
3	Feiler, Frederick W.	269 W. Thayer St., Philadelphia, Pa.	12912	Philadelphia. ²
8	Fessenden, Edgar H.	820 Putnam Ave., Brooklyn, N. Y.	14922	Brooklyn. ²
2	Finley, Chester T.	R. F. D. No. 9, Mansfield, Ohio.	13734	Chicago.
13	*Fitzpatrick, William S.	1212 Fourth Ave., Watervliet, N. Y.	14167	New Orleans.
28	Flanders, A. D.	200 S. Crysler St., Independence, Mo.	13456	Fort Leavenworth, Kans. ⁴
24	*Grasser, Charles H.	2510 W. Huntingdon St., Philadelphia, Pa.	14967	New York.
3	Harper, Ben.	1319 Sunset Beach, Santa Monica, Cal.	13851	Los Angeles.
8	*Heimbecker, Albert L.	631 E. 227th St., New York, N. Y.	14952	New York.
27	Henry, Ralph E.	26274 N. Griffin Ave., Los Angeles, Cal.	13866	Los Angeles.
18	*Hohlbein, Charles A.	3515 Woodlawn Ave., Seattle, Wash.	13920	San Francisco.
15	*Horney, Henry Q.	1726 Van Buren St., New York, N. Y.	14963	New York.
9	*Hutchison, Joseph L.	1532 24th Ave., Seattle, Wash.	14143	Seattle.
25	*Johnson, William.	1117 3d Ave., Seattle, Wash.	14148	Do.
14	*Johnston, J. Stanley.	321 St. Charles St., New Orleans, La.	14168	New Orleans.
27	Jolly, Carl F.	403 W. Amerige Ave., Fullerton, Cal.	13867	Los Angeles.
28	*Jones, James E.	25 Elm St., New York, N. Y.	14972	New York.
17	*Jorgensen, Edward T.	4135 20th St., San Francisco, Cal.	13918	San Francisco.
4	*Kay, William O.	1330 N. 59th St., Philadelphia, Pa.	14951	New York.
28	*Kearney, Nelson J.	Maywood, N. J.	14971	Do.
27	*Kello, James C.	R. F. D. No. 1, South Jacksonville, Fla.	13360	Darien, C. Z. ³
27	Kemp, Victor H.	803 E. 28th St., Los Angeles, Cal.	13865	Los Angeles.

* License issued as renewal of expiring license without examination. Otherwise license issued on written examination.

¹ All licenses issued by radio inspectors of the Department of Commerce unless otherwise indicated.

² License issued by radio examining officer, Navy Department.

³ License issued by radio examining officer, War Department.

First grade—Continued.

Date.	Licensee.	Address.	Serial No.	Where issued.
10	Knise, Karl R.....	42 Orleans St., Newark, N. J.....	14924	Brooklyn. ¹
1	*Langevin, Carl C.....	9 Olds Pl., Hartford, Conn.....	14920	Do. ¹
29	*Lebowitz, Samuel.....	2106 Cropsey Ave., Brooklyn, N. Y.....	14974	New York.
15	Leland, Wallace H.....	912 Ludian Rock Ave., Berkeley, Cal.....	13917	San Francisco.
28	*Lewis, Paul S.....	117 N. Main St., Sellersville, Pa.....	14973	New York.
8	*Linden, Bernard H.....	1131 E. 24th St., Oakland, Cal.....	13924	San Francisco.
27	*Livesey, Elvyn.....	242 N. Ditman St., Los Angeles, Cal.....	13910	Do.
27	*Luckett, William L.....	Fort Screven, Ga.....	12189	Baltimore.
27	Lynde, Lawrence F.....	1129 Locust Ave., Long Beach, Cal.....	13862	Los Angeles.
5	Lyon, John D.....	1141 Mendocino St., Altadena, Cal.....	13855	Do.
3	Macdonald, Russell.....	4146 44th Ave. SW., Seattle, Wash.....	14141	Seattle.
6	*MacGregor, James A.....	241 E. 234th St., New York, N. Y.....	13359	Darien, C. Z. ¹
7	Maddox, Glenn E.....	1321 3d Ave., Seattle, Wash.....	14142	Seattle.
3	Marshall, George E.....	2045 S. Lawrence Ave., Wichita, Kans.....	13455	Fort Leavenworth, Kans. ²
11	*Mathison, Volney G.....	Care Federal Telegraph Co., San Francisco, Cal.....	13913	San Francisco.
27	*McEwen, George E.....	224 W. 40th St., Savannah, Ga.....	12190	Baltimore.
28	McFarland, Dan L.....	2317 Juliet St., Los Angeles, Cal.....	13868	Los Angeles.
27	*Merrill, John S.....	521 Broughton St., Savannah, Ga.....	12191	Baltimore.
3	*Merry, Reginald A.....	2108 Daly Ave., Bronx, New York, N. Y.....	14100	New York.
16	Meyer, Jack.....	418 10th St., Brooklyn, N. Y.....	14927	Brooklyn. ¹
23	*Miehls, Valentine A.....	292 Pequot Ave., New London, Conn.....	14272	Boston.
1	*Minners, Arthur J.....	699 E. 18th St., Brooklyn, N. Y.....	14096	New York.
9	Munn, Lloyd C.....	30 Sherman Ave., Newark, N. J.....	14953	Do.
14	*Murphy, John C.....	378 State St., Brooklyn, N. Y.....	14961	Do.
15	Nash, John A.....	2029 Valentine Ave., New York, N. Y.....	14926	Brooklyn. ¹
6	Neifert, Rueben G.....	Box 26, Orange, Cal.....	13856	Los Angeles.
22	*Nisley, Paul H.....	2406 6th St., Harrisburg, Pa.....	14966	New York.
27	*Ogles, Lucian G.....	Care Marconi Co., San Francisco, Cal.....	13923	San Francisco.
13	O'Leary, John P.....	Phoenix, Ariz.....	13858	Phoenix, Ariz.
13	*Osterloh, Walter.....	1337 Sargeant St., Baltimore, Md.....	12187	Baltimore.
3	Owens, John.....	2022 S. 21st St., Philadelphia, Pa.....	12913	Philadelphia. ¹
2	Peterson, Milton G.....	712 Empire St., Ishpeming, Mich.....	13733	Chicago.
23	Pieri, Donald.....	703 E. 137th St., New York, N. Y.....	14928	Brooklyn. ¹
15	*Ribler, Nathan J.....	531 E. 148th St., New York, N. Y.....	14962	New York.
13	*Rich, Walter W.....	119 Elm Ave., Mt. Vernon, N. Y.....	14960	Do.
10	*Robinson, George N.....	18 Jefferson St., Brooklyn, N. Y.....	14956	Do.
25	*Rogers, Edward W.....	1212 Canal St., New Orleans, La.....	14172	New Orleans.
8	*Rogers, George H.....	17 Battery Pl., New York, N. Y.....	14970	New York.
28	*Rowe, Glenn S.....	303 Hennen Annex, New Orleans, La.....	14173	New Orleans.
20	Scharf, Theodore M.....	1742 Madison St., Baltimore, Md.....	12188	Baltimore.
3	*Seibold, William J.....	1821 E. Thayer St., Philadelphia, Pa.....	14099	New York.
6	*Sidnell, Robert G.....	250 Thompson St., Ann Arbor, Mich.....	13735	Chicago.
24	Smith, Noel.....	363 E. 136th St., New York, N. Y.....	14931	Brooklyn. ¹
10	*Sproat, Hen.....	S. S. California, New York, N. Y.....	14959	New York.
17	*Taylor, David M.....	Merchants Exchange Bldg., San Francisco, Cal.....	13919	San Francisco.
27	*Theveneh, Clarence S.....	371 Seymour Ave., Newark, N. J.....	14968	New York.
27	Tombaugh, Fred E.....	640 W. 42d St., Los Angeles, Cal.....	13864	Los Angeles.
23	Townsend, George R.....	320 Lionel Ave., Solvay, N. Y.....	14930	Brooklyn. ¹
5	Vodra, George G.....	211 South Ave. 20, Los Angeles, Cal.....	13854	Los Angeles.
8	*Walden, Myran.....	994 57th St., Oakland, Cal.....	13911	San Francisco.
3	Walters, Leslie.....	153 E. 86th St., New York, N. Y.....	14921	Brooklyn. ¹
20	Waters, John E.....	2002 N. Broadway, Santa Ana, Cal.....	13859	Los Angeles.
7	Webb, Mon L.....	Fort Mason, San Francisco, Cal.....	13909	San Francisco.
1	*Weide, Frank W.....	219 12th St., Milwaukee, Wis.....	13731	Chicago.
27	*Whitney, Charles L.....	Central Ave., Fort Lee, N. J.....	14969	New York.
21	*Williams, Hugh E.....	Box 491, Eureka, Cal.....	13922	San Francisco.
22	*Wilson, Walter B.....	917 N. 47th St., Seattle, Wash.....	14146	Seattle.
25	*Wilson, Willard S.....	705 Adams St., Wilmington, Del.....	12916	Philadelphia. ¹
15	Woodcock, William P.....	496 W. Ferry St., Buffalo, N. Y.....	13736	Buffalo.
15	Wright, Harry E.....	1835 Alice St., Oakland, Cal.....	13916	San Francisco.
27	Young, John M.....	1000 W. 7th St., Los Angeles, Cal.....	13860	Los Angeles.

Second grade.

29	Chambers, James.....	427 Banks St., San Francisco, Cal.....	13224	San Francisco.
25	Cole, Edwin A.....	806 S. Dakota St., Tampa, Fla.....	12903	Key West, Fla. ¹
13	Cross, Wilbur E.....	2872 W. 12th St., Cleveland, Ohio.....	12350	Cleveland.
13	Dinga, William E.....	643 Amsterdam Ave., New York, N. Y.....	13825	Brooklyn. ¹
28	Doig, John H., Jr.....	3982 1st St., San Diego, Cal.....	*13283	San Diego.
21	Farmer, Gordon C.....	Box 199, Burbank, Cal.....	13276	Los Angeles.
15	Fraser, Cyrus H.....	48 Glenwood Ave., Buffalo, N. Y.....	12387	Buffalo.
14	Garretson, Oliver S.....	911 Jane St., Los Angeles, Cal.....	13275	Los Angeles.
22	Gleason, George F.....	Placentia, Cal.....	13277	Do.

* License issued as renewal of expiring license without examination. Otherwise license issued on written examination.

¹ License issued by radio examining officer, Navy Department.

² License issued by radio examining officer, War Department.

Second grade—Continued.

Date.	Licensee.	Address.	Serial No.	Where issued.
27	Hansen, Franklin, jr.....	926 Boston Court, Pasadena, Cal.....	13280	Los Angeles.
5	Hawley, George N.....	344 S. Olive St., Los Angeles, Cal.....	13274	Do.
2	Hayes, Winston E.....	Valparaiso, Ind.....	12345	Chicago.
13	Henney, Julian K.....	10008 Euclid Ave., Cleveland, Ohio.....	12349	Do.
5	Hibbard, Charles H., jr.....	156 Bellefontaine St., Pasadena, Cal.....	13273	Los Angeles.
29	Johnson, F. Kenneth.....	715 East Ave. 43, Los Angeles, Cal.....	13284	Do.
14	Koegel, Carl J.....	258 Bigelow St., Newark, N. J.....	13826	Brooklyn. ¹
3	Kouwenhoven, William.....	Johns Hopkins University, Baltimore, Md.....	12153	Baltimore.
29	Leigh, Philip P.....	814 5th St., Santa Monica, Cal.....	13285	Los Angeles.
2	Liggett, Howard J.....	Virdean, Ill.....	12342	Chicago.
28	Marsh, Hallan N.....	1225 W. Brookes Ave., San Diego, Cal.....	13282	Chicago.
3	Merritt, Melville B.....	1229 W. Hilton St., Philadelphia, Pa.....	12478	Philadelphia. ¹
15	Moore, Wm. C.....	90 Bedford Ave., Buffalo, N. Y.....	12386	Buffalo.
21	Parker, Clarence A.....	3749 Montrose Ave., Chicago, Ill.....	12390	Chicago.
2	Rohweder, Henry.....	Preston, Iowa.....	12344	Do.
2	Russell, Conrad.....	Valparaiso, Ind.....	12343	Do.
28	Schell, Richard, jr.....	35 Grasmere Ave., Grasmere, N. Y.....	13828	Brooklyn. ¹
25	Seefred, Howard C.....	343 S. Fremont Ave., Los Angeles, Cal.....	13279	Los Angeles.
25	Shelton, R. O.....	3443 5th St., San Diego, Cal.....	13278	San Diego.
28	Space, Wilson.....	3538 5th St., San Diego, Cal.....	13281	Los Angeles.
13	Spencer, John E.....	592 Lake St., Ashtabula, Ohio.....	12345	Cleveland.
27	Spratley, George M.....	636 S. Main St., Sapulpa, Okla.....	12209	New Orleans.
21	Turner, Herbert C.....	1703 S. Berendo St., Los Angeles, Cal.....	13286	Los Angeles.
29	Ush, Chester A.....	Valparaiso, Ind.....	12391	Chicago.
16	Ward, Lester J.....	659 Chestnut St., Richmond Hill, N. Y.....	13827	Brooklyn. ¹
13	Werner, Herman E.....	41 Fay St., Akron, Ohio.....	12346	Cleveland.

¹ License issued by radio examining officer, Navy Department.

LETTER OF APPRECIATION FROM THE SECRETARY OF COMMERCE.

DEPARTMENT OF COMMERCE,
OFFICE OF THE SECRETARY,
Washington, December 9, 1916.

THE COMMISSIONER OF NAVIGATION:

I beg to express my appreciation of the faithful and unselfish services of the officers and employees of your Bureau during the calendar year now closing and to extend to each and every one of them my cordial wishes for a glad Christmas and a happy and prosperous new year.

Kindly post this letter prominently as it is my earnest desire that all shall see it.

WILLIAM C. REDFIELD,
Secretary.

CHANGES IN RADIO OPERATOR EXAMINATION POINTS.

The examining of radio operators at Fort Monroe, Va., and the Norfolk Navy Yard has been discontinued. Operators desiring to be examined at Norfolk should make application to the radio inspector, Citizens' Bank Building, in that city.

The office of the radio examining officer at Colon, Canal Zone, has been moved to the naval radio station at Darien.

ALASKAN RADIO STATION CLOSED.

The radio station of the Alaska Herring & Sardine Co., at Port Walter, Alaska, closed for the season on December 2 and will reopen for business about March 15, 1917.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, February 1, 1917—No. 26.

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	System.	Wave lengths.	Service.	Hours.
Empire, Oreg. ¹	NZV..	U. S. Army.....	300.....	O	X
Fort Bliss, Tex. ¹	WZO..	do.....	.....	.....	.....
Fort Huachuca, Ariz. ¹	WZP..	do.....	.....	.....	.....

¹ Station operated and controlled by the United States Signal Corps, War Department, Washington, D. C.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Service.	Hours.
Admiral Seabee ¹	WAG.	.....	300, 600.....	.....	.....
Benj. F. Packard ²	WLA..	Kilbourne & Clark, 1,000....	300, 450, 525, 600.	PG	X
Cambridge ³	KGR.	.....	300, 600.....	.....	.....
Capto.....	KWL.	.....	.....	.....	.....
Carl D. Bradley ⁴	WGN.	Marconi.....	300, 600.....	PG	.....
City of Breckton ⁵	KXO..	Nesco.....	300, 600.....	.....	.....
Col. P. S. Michie ⁶	NZU..	U. S. Army.....	200, 300, 425, 600.	O	X
Eagle ⁷	KIR..	Marconi.....	300, 600.....	PG	.....
Flrwood ⁸	WSB..	Kilbourne & Clark, 1,000....	300, 450, 525, 600.	PG	N
Freeport Sulphur No. 1 ⁹	KRA..	Marconi, 1,000.....	300, 600.....	PG	X
Freeport Sulphur No. 2 ¹⁰	KRG..	Marconi.....	300, 600.....	.....	.....
Greenwood ¹¹	WLL..	.....	.....	.....	.....
Julia Luckenbach ¹²	KGZ..	.....	300, 600.....	.....	.....
Luckenbach No. 5 ¹³	KEV..	.....	.....	.....	.....
Nokomis ¹⁴	WHD..	Marconi.....	.....	.....	.....
Redwood ⁸	WSD..	Kilbourne & Clark, 1,000....	300, 450, 525, 600.	PG	N
Santa Rosa ¹⁵	WBO..	Marconi.....	300, 600.....	.....	.....
Tiger ⁷	KIT..	do.....	300, 600.....	PG	.....
Van Hogendorp ¹⁶	KVN..	do.....	300, 450, 600.....	PG	.....
Vigo ¹⁷	KMC..	do.....	300, 600.....	PG	.....
W. C. Teagle ¹⁸	KTY..	do.....	300, 600.....	PG	.....
W. F. Burrows ¹⁹	WHG..	Kilbourne & Clark, 1,000....	300, 450, 525, 600.	PG	X
W. F. White ²⁰	WGC..	Marconi.....	300, 600.....	PG	.....

¹ Pacific Alaska Navigation Co., owner of vessel.

² Range 100; rates, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by the Northwestern Fisheries Co., owner of vessel.

³ New York & New Orleans Steamship Co., owner of vessel.

⁴ Rates, 2 c. per word 20 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Bradley Transportation Co., owner of vessel.

⁵ New England Steamship Co., owner of vessel.

⁶ Radio station operated and controlled by the United States Signal Corps, War Department, Washington, D. C. Government, owner of vessel, seagoing dredge.

⁷ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Standard Transportation Co., owner of vessel.

⁸ Range, 100; rates, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by the Pacific American Fisheries Co., owner of vessel.

⁹ Range, 100; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Freeport Sulphur Transportation Co., owner of vessel.

¹⁰ Freeport Sulphur Transportation Co., owner of vessel.

¹¹ Greenwood Steamship Co., owner of vessel.

¹² Edgar F. Luckenbach, owner of vessel.

¹³ Luckenbach Steamship Co., owner of vessel.

¹⁴ Horace E. Dodge, owner of vessel, yacht.

¹⁵ W. R. Grace & Co., owner of vessel.

¹⁶ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Sarnia Steamship Corp., owner of vessel.

¹⁷ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Junius H. Stone (Transoceanic Steamship Corp.), owner of vessel.

¹⁸ Rates, North and South American service, 4 c. per word 40 c. minimum per radiogram; transoceanic service, 8 c. per word 80 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Standard Oil Co. of N. J., owner of vessel.

¹⁹ Range, 100; rates, 4 c. per word 40 c. minimum per radiogram. Radio station operated and controlled by Libby, McNeill & Libby Co., owner of vessel.

²⁰ Rates, 2 c. per word 20 c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Limestone Transportation Co., owner of vessel.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
KEV..	Luckenbach, No. 5.....b	NZV..	Empire, Oreg.....c
KGR..	Cambridge.....b	WAG..	Admiral Sebree.....b
KGZ..	Julia Luckenbach.....b	WBO..	Santa Rosa.....b
KIR..	Eagle.....b	WGC..	W. F. White.....b
KIT..	Tiger.....b	WGN..	Carl D. Bradley.....b
KMC..	Vigo.....b	WHD..	Nokomis.....b
KRA..	Freeport Sulphur No. 1.....b	WHG..	W. F. Burrows.....b
KRG..	Freeport Sulphur No. 2.....b	WLA..	Benj. F. Packard.....b
KTY..	W. C. Teagle.....b	WLL..	Greenwood.....b
KVN..	Van Hogendorp.....b	WSB..	Firwood.....b
KWL..	Capto.....b	WSD..	Redwood.....b
KXO..	City of Brockton.....b	WZO..	Fort Bliss, Tex.....c
NZU..	Col. P. S. Michle.....b	WZP..	Fort Huachuca, Ariz.....c

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Medford, Mass.....	1XE..	300, 600, variable.	P	X	American Radio & Research Corp.
Minneapolis, Minn.....	9YP..	200, 425.....	P	X	American Telegraph College.
Rawson Ranch, near Kuna, Idaho.	7ZR..	200, 425.....	P	X	Homer E. Rawson.
Roland Park, Md.....	3XA..	200, 300, 400, 600.	P	X	Louis D. Coriell.
Valley Stream, N. Y.....	2ZL..	200, 300, 425, 600.	P	X	J. Owen Smith.
Woodstock, Ill.....	9ZG..	200, 425.....	P	X	Sydney A. Greenleaf.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1XE...	First district: Medford, Mass.	7ZR....	Seventh district: Rawson Ranch, near Kuna, Idaho.
2ZL....	Second district: Valley Stream, N. Y.	9YP....	Ninth district: Minneapolis, Minn.
3ZA....	Third district: Roland Park, Md.	9ZG....	Woodstock, Ill.

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this Bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.
G. loc =Geographical location: O=west longitude, N=north latitude.
Call =Call letters assigned.
System=Radio system used and sparks per second.
Range =Normal range in nautical miles.
W. L. =Wave lengths assigned: Normal wave lengths in italics.

Service= Nature of service maintained:

PG=General public.

PR=Limited public.

P =Private.

O =Government business exclusively.

Hours =Hours of operation:

N =Continuous service.

X =No regular hours.

m =a. m. (12m=midday).

s =p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

AVALON, CAL.—W. L., 300, 500, 600. Note, Radio station operated and controlled by the Marconi Co. The station communicates only with the steam ferries *Cabrillo* and *Hermosa* and with the station E. San Pedro, Cal.; rates, 2c. per word 20c. minimum per radiogram.

CAPE MAY, N. J.—W. L., 300, 450, 600.

CHICAGO, ILL.—System, Marconi, 1,000; W. L., 300, 450, 600; hours, 1m-11m, 12m-5s, 8s-12s.

DAUNTLESS (WRP).—Strike out all particulars.

DOUGLAS, ARIZ.—Range, 100; W. L., 600, 1650; service, limited commercial.

ENSENADA, P. R.—Range, 150; system, Marconi, 480; hours, week days, 8m-12m, 2s-5s.

FORT YUKON, ALASKA.—Service, PG.

HOLY CROSS, ALASKA.—Hours, receives and transmits at 11m, 3s and 6s on week days, 11m and 6s Sundays and holidays.

JUNEAU, ALASKA.—Note, Radio station operated and controlled by the Marconi Co. The station also communicates with Chichagof; rates as for Jualin, Alaska.

KAUNAKAKAI, ISLAND OF MOLOKAI, HAWAII.—Note, Rates for interisland messages (address and signature counted and charged for), ordinary messages 15c. per word no minimum, press messages 7½c. per word no minimum, cipher or code messages (origin and destination Hawaiian Islands), 25c. per word no minimum, night letters, in plain language only, \$1 for first 24 words 4c. for each additional word. Night letters are not accepted for ships. Messages in other than the English language are charged for at code rate. Double-rush messages are charged for at double rate. Cablegrams or trans-Pacific wireless messages in cipher, code, foreign or English, are accepted and forwarded at ordinary rates plus the forwarding charges of the cable or wireless company when such messages are delivered to them for forwarding.

KAWAIHAE, ISLAND OF HAWAII, HAWAII.—Same note as for Kaunakakai, Island of Molokai, Hawaii.

LAHAINA, ISLAND OF MAUI, HAWAII.—Same note as for Kaunakakai, Island of Molokai, Hawaii.

LIHUE, ISLAND OF KAUAI, HAWAII.—Same note as for as Kaunakakai, Island of Molokai, Hawaii.

SEATTLE, WASH. (KPA).—G. loc., O 122° 20' 00'', N 47° 36' 00''; range 150; W. L., 300, 500, 600, 1650, 2,980. Notes, Radio station operated and controlled by the Marconi Co. The station also communicates with coast stations at Juneau and Ketchikan, Alaska; rates, domestic count, day messages 10 c. per word \$1 minimum per radiogram, night messages 8 c. per word 80 c. minimum per radiogram, night letters 50 words for \$1, 20 c. for each additional 10 words or less, press dispatches 3 c. per word \$1 minimum per radiogram.

WAHIWA, ISLAND OF OAHU, HAWAII.—Notes, Radio station operated and controlled by the Mutual Telephone Co. (Ltd.). Station conducts special interisland service with Kawaihæ, Lahaina, and Lihue, Hawaii, and communicates with Tutuila and Apia, Samoa. Rates for interisland messages (address and signature counted and charged for) ordinary messages 15 c. per word no minimum, press messages 7½ c. per word no minimum, cipher or code messages (origin and destina-

tion Hawaiian Islands) 25 c. per word no minimum, night letters, in plain language only, \$1 for first 24 words 4 c. for each additional word. Night letters are not accepted for ships. Messages in other than the English language will be charged for at code rate. Double-rush messages will be charged for at double rate. Cablegrams or trans-Pacific wireless messages in cipher, code, foreign or English, will be accepted and forwarded at ordinary rates plus the forwarding charges of the cable or wireless company when such messages are to be delivered to them for forwarding. For messages exchanged with Tutuila, 10 c. per word \$1 minimum per radiogram; for messages exchanged with Apia, 50 c. per word no minimum; for press messages transmitted to ships at sea, 5 c. per word 50 c. minimum per radiogram.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

- ALAMO.—W. L., 300, 450, 600.
- AMOLCO.—W. L., 300, 600; service, PG; hours, X; rates, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Boston Molasses Co., owner of vessel.
- ANN ARBOR No. 6.—Range, 100; system, Marconi, 480; hours, X.
- ATLANTA.—Strike out all particulars.
- BRAZOS.—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- BUCCANEER.—Range 150; system, Marconi, 240; service, PG; hours, X.
- CALIFORNIA (WOR).—Note, Radio station operated and controlled by the Marconi Co. Harby Steamship Co. (Inc.), owner of vessel.
- CITY OF SEATTLE.—Note, Radio station operated and controlled by the Marconi Co. Pacific Coast Co., owner of vessel. Pacific Steamship Co., charterers of vessel.
- COMMODORE.—Range, 75; system, Nesco, 1,000; W. L., 300, 600, 820, 925, 1020, 1110, 1200, 1260, 1350; service, P., hours, X. Note, Radio station operated and controlled by the Illinois Naval Battalion, owner of vessel.
- EL RIO.—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram.
- FORDONIAN.—System, Marconi; W. L., 300, 600; service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. A. J. Outerbridge, owner of vessel.
- FRANCIS HANIFY.—Strike out all particulars.
- GOVERNOR FORBES.—Strike out all particulars.
- MAINE (KXD).—System, Fessenden, 260; W. L., 300, 550, 600.
- MARYLAND.—Strike out all particulars.
- MAUI.—Service, PG; rates, North and South American service, 4 c. per word 40 c. minimum per radiogram, transoceanic service, 8 c. per word 80 c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. Matson Navigation Co., owner of vessel.
- MUNDALE.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X.
- NACOOCHIE.—W. L., 300, 450, 600.
- ONEIDA (KYP).—Range, 250; system, Composite, 1,000.
- ONEONTA.—System, Kilbourne & Clark, 1,000; W. L., 300, 450, 525, 600. Note, Radio station operated and controlled by the port of Portland, Oreg., owner of vessel.
- PAUL JONES (KVU).—Rates, 4 c. per word 40 c. minimum per radiogram.
- PENNANT.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X.
- QUEEN (WGX).—Note, Radio station operated and controlled by the Marconi Co. Pacific Coast Co., owner of vessel. Pacific Steamship Co., charterers of vessel.
- SENATOR.—Note, Radio station operated and controlled by the Marconi Co. Pacific Coast Co., owner of vessel. Pacific Steamship Co., charterers of vessel.
- SPOKANE.—Note, Radio station operated and controlled by the Marconi Co. Pacific Coast Co., owner of vessel. Pacific Steamship Co., charterers of vessel.
- SUNLITE.—Range, 200; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X.
- UMATILLA.—Note, Radio station operated and controlled by the Marconi Co. Pacific Coast Co., owner of vessel. Pacific Steamship Co., charterers of vessel.
- VENEZUELA.—Range, 200; system, Marconi, 480; hours, N.

WALLULA.—System, Kilbourne & Clark, 1,000; W. L., 300, 450, 525, 600. Note, Radio station operated and controlled by the port of Portland, Oreg., owner of vessel.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, only.]

COLUMBIA, Mo. (9XQ).—Strike out all particulars.

KEY WEST, FLA.—Strike out all particulars.

RAPID CITY, S. DAK. (9XA).—W. L., 425, variable. Radio station operated and controlled by the South Dakota School of Mines.

MISCELLANEOUS.

COMMERCIAL RADIO OPERATORS LICENSED DURING MONTH OF DECEMBER, 1916.

Extra first grade.

Date.	Licensee.	Address.	Serial No.	Where issued. ¹
1	Ingalls, Herbert E.....	176 Hickborn St., Revere, Mass.....	60	Boston. ²

First grade.

7	*Barbalate, Aaron.....	1549 44th St., Brooklyn, N. Y.....	14984	New York.
7	*Baxter, Joseph H.....	274 10th St., Astoria, Oreg.....	14751	Seattle.
20	*Beach, Chester L.....	215 Clark St., Westfield, N. J.....	15006	New York.
13	*Bell, Lloyd E.....	803 N. Fulton Ave., Baltimore, Md.....	14280	Boston.
12	*Bergman, I ester J.....	R. F. D. No. 2, Belmar, N. J.....	14997	New York.
18	Black, William R.....	547 E. 87th St., New York, N. Y.....	15251	Brooklyn. ²
27	*Blake, Charles H.....	Care Federal Tel. Co., South San Francisco, Cal.....	13947	San Francisco.
11	Blankenship, Charles C.....	59 Cottage St., Everett, Mass.....	14279	Boston.
12	*Bolton, James J.....	State Road East, Wayland, Mass.....	14285	Do.
18	*Bookmyer, Alvin J.....	115 Wilmot St., San Francisco, Cal.....	13934	San Francisco.
2	*Boucheron, Pierre H.....	20 Fulton St., Maspeth, L. I., N. Y.....	14975	New York.
9	*Bourne, Evan F.....	Santa Marta, Republic of Colombia.....	14989	Do.
26	*Bowers, Albert F.....	1946 W. Pratt St., Baltimore, Md.....	12210	Baltimore.
2	Bowman, Orley D.....	Fort Monroe, Va.....	13592	Fort Monroe. ²
18	*Boyle, John M.....	3228 Mission St., San Francisco, Cal.....	13939	San Francisco.
20	*Breitenbach, Derek S.....	Buxton, N. C.....	12208	Baltimore.
2	Bridger, Harley J.....	Fort Monroe, Va.....	15104	Fort Monroe. ²
2	Broek, Terry P.....	do.....	15102	Do. ³
14	*Broadhead, Edgar F.....	Sayville, L. I., N. Y.....	15303	New York.
22	*Brouasard, Joseph E.....	25 Elm St., New York, N. Y.....	15008	Do.
12	*Brower, Robert H.....	3184 Washington St., San Francisco, Cal.....	13931	San Francisco.
29	Bruce, Edmond.....	731 Rock Creek Church Road, Washington, D. C.....	12018	Washington.
8	*Burch, Joseph A.....	S. S. Topila, Galveston, Tex.....	14184	New Orleans.
13	*Burgess, George H.....	1148 57th St., Brooklyn, N. Y.....	14999	New York.
6	*Campbell, Colby D.....	2001 Ave I, Galveston, Tex.....	14182	New Orleans.
19	*Cannon, Clifford, H.....	3047 23d St., San Francisco, Cal.....	13941	San Francisco.
11	*Carter, Maurice G.....	47 Thames St., Newport, R. I.....	14993	New York.
14	*Cheetham, Henry R.....	81 Avon St., Somerville, Mass.....	15901	Do.
19	Circeo, Charles J.....	22 Battery St., Boston, Mass.....	14288	Boston.
8	Cohen, Louis.....	71 Hinsdale St., Brooklyn, N. Y.....	14935	Brooklyn. ²
2	*Cole, George E.....	624 E. 17th St., Brooklyn, N. Y.....	14977	New York.
29	Cole, Jirah D., jr.....	810 Vernon Ave., Glencoe, Ill.....	13747	Chicago.
8	*Coleman, Arthur.....	4 Stone St., New York, N. Y.....	14987	New York.
1	*Commagere, E. L.....	835 Roosevelt Pl., New Orleans, La.....	14177	New Orleans.
18	Cornet, Hermannus J.....	303 Main St., Union Hill, N. J.....	14944	Brooklyn. ²
8	*Crittenden, Algernon.....	1937 Stillwell Ave., Brooklyn, N. Y.....	14985	New York.
8	*Croney, Joseph, E.....	690 Prospect Pl., Brooklyn N. Y.....	14933	Brooklyn. ²
1	*Cronin, Jeremiah K.....	U. S. Naval Radio Station, Norfolk, Va.....	12968	Norfolk. ²
9	*Curtis, Otto E.....	84 St. Stephen St., Boston, Mass.....	12200	Baltimore.
13	*Dailey, Richard B.....	Buxton, N. C.....	12204	Do.
11	*Davies, Richard J., jr.....	334 4th St., Union Hill, N. J.....	14991	New York.
28	*Davis, William H.....	201 W. Franklin St., Baltimore, Md.....	12211	Baltimore.
29	Davis, William R.....	1409 West Edwards St., Springfield, Ill.....	13746	Chicago.

*License issued as renewal of expiring license without examination. Otherwise license issued on written examination.

¹ All licenses issued by radio inspectors of the Department of Commerce unless otherwise indicated.

² License issued by radio examining officer, Navy Department.

³ License issued by radio examining officer, War Department.

MISCELLANEOUS—Continued.

COMMERCIAL RADIO OPERATORS LICENSED DURING MONTH OF
DECEMBER, 1916—continued.

First grade—Continued.

Date.	Licensee.	Address.	Serial No.	Where issued.
13	*De Coste, Daniel J.	90 Lonsdale St., Dorchester, Mass.	14281	Boston.
18	*Dent, Laramie C.	608 S. Dearborn St., Chicago, Ill.	13742	Chicago.
2	De Pretis, John	Fort Monroe, Va.	13596	Fort Monroe. ¹
11	*Deysher, John P.	Sayville, L. I., N. Y.	14992	New York.
12	*Dobbins, John S.	R. F. D. No. 2, New Orleans, La.	14187	New Orleans.
4	*Drummev, William J.	424 Broadway, South Boston, Mass.	14274	Boston.
2	Dula, Julius A.	Fort Monroe, Va.	13599	Fort Monroe. ¹
2	Easterbrook, Charles A.	do.	13591	Do. ¹
27	*Eckhardt, John P., jr.	615 Prospect Pl., Brooklyn, N. Y.	15260	Brooklyn. ²
12	*Eddey, Arlof N.	Block Island, R. I.	12367	Boston. ²
15	Edmonds, Alonzo	332 Duke St., Norfolk, Va.	13006	Charleston. ²
8	*Edmonds, Edward J.	Pacific States Hotel, San Francisco, Cal.	13927	San Francisco.
6	Elliott, Fred	1102 E. Pearl St., Jackson, Mich.	13740	Chicago.
9	*Elliott, Seymour R.	16 Kent St., Cliftondale, Mass.	14278	Boston.
12	*Fagan, Charles L.	Rahway, N. J.	14996	New York.
29	*Fairley, Edward R.	987 Pine St., Oakland, Cal.	13950	San Francisco.
9	Ferriek, William J.	185 Audubon Ave., New York, N. Y.	14947	Brooklyn. ²
9	Ferris, Malcolm	3409 Baring St., Philadelphia, Pa.	12917	Philadelphia. ²
15	Fields, James C.	Naval Radio Station, New Orleans, La.	14191	New Orleans.
12	*Filson, Norman W.	29 Barton St., Waltham, Mass.	14282	Boston.
11	*Flottman, John M.	Care Marconi Co., San Francisco, Cal.	13929	San Francisco.
11	Forness, Fred	Wahiawa, Hawaii.	13310	Pearl Harbor, Hawaii. ²
27	*Friend, William H.	217 W. Clark St., Eureka, Cal.	13948	San Francisco.
4	Fuller, Ray	Care Tropical Radio Tel. Co., New Orleans, La.	14178	New Orleans.
18	Gaul, Charles	320 St. Nicholas Ave., New York, N. Y.	14949	Brooklyn. ²
12	*Giambruno, Waldon P.	1423 Linden St., Oakland, Cal.	13930	San Francisco.
2	Goodwin, James E.	Fort Monroe, Va.	13597	Fort Monroe. ¹
8	*Grinnell, Milton W.	55 Buffum St., Salem, Mass.	14275	Boston.
19	Hanley, John E.	2580 Poplar St., New York, N. Y.	15255	Brooklyn. ²
7	*Harrigan, John J.	Virginia Beach, Va.	12196	Baltimore.
8	*Harte, James W.	1862 N. Uber St., Philadelphia, Pa.	14988	New York.
7	*Hartley, Edwin M.	257 Grant St., Cape May, N. J.	12195	Baltimore.
20	*Hatch, Robert I.	1485 Pine St., San Francisco, Cal.	13942	San Francisco.
14	*Heiser, Fred D.	Sayville, L. I., N. Y.	15002	New York.
12	*Henderson, George E.	233 S. Pierce St., New Orleans, La.	14185	New Orleans.
12	*Hodges, Sandel A.	2804 Kelsey St., Berkeley, Cal.	13935	San Francisco.
2	Howe, Sidney C.	Fort Monroe, Va.	13598	Fort Monroe. ¹
12	Hughes, William V.	965 Teller Ave., New York, N. Y.	14945	Brooklyn. ²
12	*Hillingworth, F. Harold.	501 E. Forsythe St., Jacksonville, Fla.	12202	Baltimore.
9	Jagers, Homer D.	312 University St., Healdsburg, Cal.	13928	San Francisco.
6	*Jensen, Jens.	1101 13th Ave. South, Seattle, Wash.	14150	Seattle.
6	*Jeppesen, Jeppe H.	Skive, Denmark	14981	New York.
18	Jewett, Robert C.	607 Eagle Ave., New York, N. Y.	14948	Brooklyn. ²
7	Johnson, Axel W.	459 E. 135th St., New York, N. Y.	14932	Do. ²
21	*Jones, Carl L.	Bostick, S. C.	15007	New York.
4	*Jones, Edward T.	3999 Dumaine St., New Orleans, La.	14180	New Orleans.
13	*Julien, Ira F.	P. O. Box 43, Astoria, Oreg.	14759	Seattle.
14	Kahl, Harry	967 Sherman Ave., New York, N. Y.	14937	Brooklyn. ²
8	Kallinic, Peter.	312 W. 27th St., New York, N. Y.	14934	Do. ²
19	*Keever, Ross N.	66 Heidt Ave., Oakwood, Mich.	13743	Chicago.
27	*Kennedy, Colin	2340 West Boulevard, Los Angeles, Cal.	13945	San Francisco.
4	*Kent, William P.	Virginia Beach, Va.	12193	Baltimore.
12	*Lange, August F.	2824 W. Genesee St., Seattle, Wash.	13932	San Francisco.
12	Lawrence, Edwin E.	Naval Radio Station, New Orleans, La.	14158	New Orleans.
27	Leathers, John W.	78 Bay State Ave., Somerville, Mass.	14291	Boston.
11	Leighton, Harold W.	25 Walnut St., Lynn, Mass.	12655	Do. ²
21	*Lewis, James C.	538 Massachusetts Ave., Boston, Mass.	14220	Do. ²
2	Lonz, Arthur M.	Fort Monroe, Va.	13595	Fort Monroe. ¹
9	*Lovejoy, Loren A.	535 N. 75th St., Seattle, Wash.	14732	Seattle.
15	Lovett, John A.	30 Bayside Pl., Rockaway Beach, N. Y.	14940	Brooklyn. ²
12	*Lovlee, Raymond P.	Kenneth Hotel, Seattle, Wash.	14754	Seattle.
12	Madden, Francis X.	2391 Davidson Ave., New York, N. Y.	14916	Brooklyn. ²
15	Mahoney, John J.	550 Kappoek St., New York, N. Y.	14939	Do. ²
13	*Marrlott, John A.	Kensington, Alaska.	14761	Seattle.
12	Mason, Howard F.	2702 31st Ave., South Seattle, Wash.	14755	Do.
1	*Maxson, Charles P.	10 Maxson St., West Mystic, Conn.	14176	New Orleans.
7	*McBride, Karl.	1003 Edmonson Ave., Baltimore, Md.	12194	Baltimore.
4	*McKee, Loyd W.	231 N. Monroe St., Baltimore, Md.	12192	Do.
15	McKee, Russel	4218 Napier Ave., New York, N. Y.	14942	Brooklyn. ²

* License issued as renewal of expiring license without examination. Otherwise license issued on written examination.

¹ License issued by radio examining officer, War Department.

² License issued by radio examining officer, Navy Department.

MISCELLANEOUS—Continued.

COMMERCIAL RADIO OPERATORS LICENSED DURING MONTH OF
DECEMBER, 1916—continued.

First grade—Continued.

Date.	Licensee.	Address.	Serial No.	Where Issued.
27	*McKinnon, John L.	3014 Blanchard St., Los Angeles, Cal.	13946	San Francisco.
27	*McLarney, Thomas A.	Care of United Fruit Co., Bocas del Toro, Panama.	15011	New York.
28	*McQuaid, John F.	L. C. Smith Bldg., Seattle, Wash.	14771	Seattle.
4	McWeeny, John L.	U. S. S. Porter, New York, N. Y.	12654	Boston. ¹
7	*Meekin, William J.	Pier 37, Brooklyn, N. Y.	14982	New York.
2	Messerschmidt, John A.	Fort Monroe, Va.	13594	Fort Monroe. ²
11	Miller, Herbert W.	203 E. 71st St., New York, N. Y.	14936	Brooklyn. ¹
15	Miller, William C.	Naval Radio Station, Tatoosh, Wash.	13204	Tatoosh. ¹
23	*Mohl, Edward O.	920 Taylor St., San Francisco, Cal.	13944	San Francisco.
21	*Morgan, Arthur.	4 Londonderry Rd., Liverpool, Eng.	14289	Boston.
8	*Morris, Maynard C.	601 American Bldg., Baltimore, Md.	12199	Baltimore.
15	*Moulton, Arthur D.	45 Avon St., Wakefield, Mass.	14283	Boston.
13	*Mousley, Franklin.	Palace Hotel, San Francisco, Cal.	13937	San Francisco.
2	Muller, Hans A.	Fort Monroe, Va.	15101	Fort Monroe. ²
14	*Murphy, Francis J.	1526 Sansom St., Philadelphia, Pa.	15005	New York.
2	Murphy, Joseph.	Fort Monroe, Va.	15105	Fort Monroe. ²
21	*Murray, Eugene M.	Haverford, Pa.	12209	Baltimore.
7	*Nelson, Francis A.	Virginia Beach, Va.	12197	Do.
26	*Nicholas, Edwin A.	2889 W. 12th St., Cleveland, Ohio.	13744	Chicago.
8	*Nicholls, George W.	9 Wolcott St., Malden, Mass.	14276	Boston.
12	*Nichols, Clifton T.	2152 San Antonio Ave., Alameda, Cal.	13933	San Francisco.
18	Northrop, William T.	Grant Ave., Bronx, New York, N. Y.	15252	Brooklyn. ¹
2	Oldham, David C.	Fort Monroe, Va.	13593	Fort Monroe. ²
12	*O'Neill, John H.	1643 47th Ave., San Francisco, Cal.	13936	San Francisco.
9	*Ormiston, Kenneth G.	San Francisco, Cal.	13949	Do.
28	O'Stein, William W.	Newbern, N. C.	12969	Norfolk. ¹
19	*Ott, George A.	U. S. S. Pamlico, Newbern, N. C.	15151	Do.
4	*Pannill, Charles J.	Radio, Va.	12017	Washington.
11	*Pearse, William C.	505 W. 111th St., New York, N. Y.	14994	New York.
7	Perry, Joseph O.	784 Garfield St., Appleton, Wis.	13361	Darien, C. Z. ¹
21	Peterson, Frank E.	2615 Virginia St., Berkeley, Cal.	13943	San Francisco.
2	Pistelok, Frederick J.	Fort Monroe, Va.	15103	Fort Monroe. ²
29	Prenzel, Elmer.	718 S. 14th St., Sheboygan, Wis.	13745	Chicago.
6	*Quigley, Edward I.	Pier 47, North River, New York, N. Y.	14980	New York.
19	*Randow, Albert H.	Philadelphia, Pa.	12201	Baltimore.
12	Ray, John W.	151 Smart Ave., Flushing, L. I., N. Y.	15258	Brooklyn. ¹
8	*Rehbein, Arthur H. F.	163 E. 4th St., Brooklyn, N. Y.	14998	New York.
12	*Ridley, Arthur E.	South Hanson, Mass.	14277	Boston.
15	Rodan, Cornelius F.	U. S. Naval Radio Station, New Orleans, La.	14189	New Orleans.
13	*Rodebaugh, Herbert M.	Chestnut Hill, Philadelphia, Pa.	12206	Baltimore.
7	Satome, Frederic W.	1493 Harrison St., Oakland, Cal.	13926	San Francisco.
12	*Savage, Reginald S.	Care of Marconi Co., New York, N. Y.	14995	New York.
7	Sazer, Maurice L.	1019 Perdido St., New Orleans, La.	14183	New Orleans.
15	Schwartz, Frederick.	128 W. 112th St., New York, N. Y.	14941	Brooklyn. ¹
2	Seemann, Robert.	Fort Monroe, Va.	13600	Fort Monroe. ²
15	Sellers, James H.	Care Tropical Radio Tel. Co., New Orleans, La.	14190	New Orleans.
13	*Shallcross, Howard W.	West Cape May, N. J.	12203	Baltimore.
2	Shatto, Alva E.	Fort Monroe, Va.	15106	Fort Monroe. ²
16	*Shaw, Frank W.	1366 Green St., San Francisco, Cal.	13938	San Francisco.
28	Shorey, Gustavus F.	249 Grove St., Melrose, Mass.	14292	Boston.
25	Smith, Alan P., 3d.	18 E. Madison St., Baltimore, Md.	12207	Baltimore.
4	*Smith, Robert G.	Swan Island.	14179	New Orleans.
5	Stairley, Benjamin F.	Naval Radio Station, New Orleans, La.	14181	Do.
18	*Stevens, Thomas M.	Merchants Exchange Bldg., San Francisco, Cal.	13940	San Francisco.
8	*Stewart, Charles H.	St. David's, Pa.	12198	Baltimore.
19	*Tierney, Matthew C.	Siasconset, Mass.	14287	Boston.
16	Tilley, Henry H.	5 Dartmouth St., Newport, R. I.	14286	Do.
12	*Trevatt, Charles F.	L. C. Smith Bldg., Seattle, Wash.	14753	Seattle.
19	Upham, Henry.	1829 Bathgate Ave., New York, N. Y.	15256	Brooklyn. ¹
12	*Vermilya, Irving.	South Wellfleet, Mass.	12636	Boston. ¹
14	*Vogel, Wm. F.	1219 William St., Baltimore, Md.	12205	Baltimore.
15	Vosburgh, Charles P.	4328 Richardson Ave., New York, N. Y.	14943	Brooklyn. ¹
2	*Vosburgh, Ross J.	322 Lincoln Rd., Brooklyn, N. Y.	14976	New York.
18	*Wampler, Edward V.	Lynden, Wash.	14758	Seattle.
14	Ward, James J.	522 W. 182d St., New York, N. Y.	14938	Brooklyn. ¹
18	Ward, John F.	do.	14950	Do. ¹
7	*Weaver, Charles J.	1016 E. 13th St., Brooklyn, N. Y.	14983	New York.

* License issued as renewal of expiring license without examination. Otherwise license issued on written examination.

¹ License issued by radio examining officer, Navy Department.

² License issued by radio examining officer, War Department.

MISCELLANEOUS—Continued.

COMMERCIAL RADIO OPERATORS LICENSED DURING MONTH OF
DECEMBER, 1916—continued.

First grade—Continued.

Date.	Licensee.	Address.	Serial No.	Where issued.
7	*White, Chester C. ¹	554 Brunswick St., San Francisco, Cal.....	13908	San Francisco.
1	Whit, Otto H.	76 Woodward Ave., San Francisco, Cal.....	13925	Do.
14	*Wiltse, George V.	Hotel Delta, Seattle, Wash.	14756	Seattle.
13	*Woods, R.	118 Johns St., Seattle, Wash.	14757	Do.
9	Worrell, Richard A.	Sussex St., Larchmont, Norfolk, Va.....	12970	Norfolk. ²
2	*Wright, Marshall C.	569 West End Ave., New York, N. Y.	14978	New York.
12	*Young, Robert I.	1421 Arch St., West Tampa, Fla.....	14186	New Orleans.
10	*Yuter, Abe I.	715 Tremont Ave., New York, N. Y.....	14990	New York.

Second grade.

29	Agnoli, Justus J.	16 Purvis St., Long Island City, N. Y.....	13836	Brooklyn. ²
19	Cardoza, James G.	Campbel St., Oakland, Cal.	13225	San Francisco.
27	Clarkin, William	2416 Morris Ave., New York, N. Y.	13835	Brooklyn. ²
26	Donohue, Peter J.	137 W. 60th St., New York, N. Y.	13832	Do. ²
27	Downing, Joseph F.	353 W. 57th St., New York, N. Y.	13833	Do. ²
29	Fitzpatrick, George W.	3245 Ferdinand St., Seattle, Wash.	12276	Seattle.
16	*Gillen, William H.	407 W. 23d St., New York, N. Y.	12104	New York.
7	Hicks, Thomas R.	318 W. 57th St., New York, N. Y.	13831	Brooklyn. ²
4	Hotchkiss, Raymond S.	U. S. S. Porter, New York, N. Y.	12422	Boston. ²
29	Krog, Albert.	Valparaiso, Ind.	12393	Chicago.
7	May, Fred.	143 High St., Montclair, N. J.	13829	Brooklyn. ²
5	McKee, Stuart S.	New Orleans, La.	12210	New Orleans.
27	Mosher, Robert B.	236 W. 83d St., New York, N. Y.	13834	Brooklyn. ²
26	Pennypacker, Thomas R.	St. George's School, Newport, R. I.	12073	Boston.
1	Peterson, Robert M.	3 Blodgett Pl., Worcester, Mass.	12072	Do.
7	Roy, James A.	303 Orange Rd., Montclair, N. J.	13830	Brooklyn. ²
23	Swenson, Joseph.	7852 Ashworth Ave., Seattle, Wash.	12275	Seattle.
1	White, Elliott A.	634 Hinman Ave., Evanston, Ill.	12392	Chicago.

* License issued as renewal of expiring license without examination. Otherwise license issued on written examination.

¹ License issued in November; particulars received at bureau too late for publication in November list.

² License issued by radio examining officer, Navy Department.

UNUSUAL SOURCE OF AUXILIARY POWER SUPPLY.

The following is an extract from the report of Radio Operator Willard Ferris, of the steamship *Carolina* of the Goodrich Transit Co., which met with an accident on December 3, 1916, running aground on Stony Creek Reef and springing several plates. The vessel is voluntarily equipped with radio apparatus and is not supplied with an auxiliary source of power supply:

The power went off at 7 p. m., and the Manitowoc station called at frequent intervals until 10 p. m., and from that time until 11 p. m. the Ludington and Milwaukee stations called, but I was unable to answer them, as there was no power. About 11 o'clock, with the permission of the captain and the assistance of some of the crew, I removed the storage batteries from the six automobiles which were on board.

I wired these batteries in series, obtaining a total voltage of 36. The transmitter was of the one-half kilowatt, 120 cycle, panel type, and by adjusting the rheostats for full power and using six plates in the quenched gap a reading of one-fourth ampere on the hot-wire ammeter was obtained and communication was established with Ludington, a distance of about 75 miles.

It was necessary to short circuit the automatic starter, as there was not enough power to raise the solenoid, and to substitute a wire for the generator field switch, in order to disconnect the motor running the quenched-gap blower and save all the power for the operation of the motor generator. The batteries were restored to the automobiles the following afternoon when the cars were placed aboard a relief vessel.

ALASKAN RADIO STATIONS CLOSED.

The radio stations at Alockanok River and Clarks Point, Alaska, and the permanently moored schooner *Metha Nelson*, located at Bristol Bay, Alaska, have been closed for the season and will reopen about March, 1917.

CHANGE IN SERVICE OF NOME RADIO STATION.

The continuous service maintained by the Signal Corps station at Nome, Alaska, has been discontinued and will be resumed on June 1, 1917. The present hours of operation are from 8 a. m. to 9 p. m. on week days, and 8 a. m. until clear and 4 p. m. until clear on Sundays and holidays.

CHANGES IN FRENCH RADIO STATIONS.

The Bureau is in receipt of information from the Director of the International Radiotelegraphic Bureau at Berne, Switzerland, that he has been advised by the Minister of French Colonies that the land station at Tabou, Occidental French Africa, has again been opened to service and that the operation of the land station at Monrovia, Liberia (FMA), has been suspended.

PROPOSED TELEGRAPH LINES, RADIO STATION, AND CODE IN PERU.

Measures have been adopted by the Peruvian Government authorizing the construction of a telegraph line between the cities of Ica and Castrovirreyna, at a cost of 6,300 Peruvian pounds (\$30,659), and the installation of wireless stations at various points in the basin of the Amazon, at a cost of 10,000 Peruvian pounds (\$48,665). El Peruano also notes that a new telegraphic code has been compiled by the Department of Telegraphs and Mails, and a commission of Government officials has been appointed to examine the code and to make a recommendation as to its adoption.

NEW RADIO STATION IN BOLIVIA.

A new radio station has recently been erected at Viacha near La Paz. The West Coast Leader says that commercial service was established October 20 between the Bolivian station and the Lima wireless station at San Cristobal.

MARINE DISASTERS IN WHICH WIRELESS FIGURED DURING THE PERIOD
JULY 1 TO DECEMBER 31, 1916.

July 11.—Steamship *Ramos* foundered in a gale while en route from Philadelphia to Cartagena, Colombia. SOS calls were answered by the Miami land station and the steamships *Van Hogendorp* and *Illinois*, all but five persons on board being saved.

July 22.—Steamship *Matatua*, stranded on rocks 7 miles south of St. Mary's Light, Cape Race. Vessel shot line to shore, and passengers and crew were removed. The distress call was answered by the steamship *Stephano*, Red Cross Line, which stood by until passengers were safely removed.

September 15.—Steamship *Congress*, with 445 persons on board, caught fire off Coos Bay, Marshfield, Oreg. The vessel was headed toward shore. SOS calls being sent out continuously, which were received by the land stations at Marshfield, Oreg., Cape Blanco, Oreg., and Eureka, Cal., and the steamship *F. A. Kilburn*. Rescue vessels were dispatched by the Marshfield station, and all persons on board were saved.

September 23.—Steamship *Bay State* ran ashore off Cape Elizabeth, Me.; total loss. Distress calls were answered by the Coast Guard cutter *Ossippe* and the naval station at Cape Elizabeth, which dispatched the tugs *Portland* and *Cumberland*. All persons on board, approximately 200 in number, were saved.

October 7.—Steamship *Antilla*, with 56 persons aboard, caught fire off the Virginia Capes while en route from Guantanamo, Cuba, to New York. Approximately 25 vessels responded to the distress calls, and all persons were saved.

October 19.—Steamship *Arapahoe* lost her rudder 25 miles north of Cape Lookout. SOS calls were answered by the steamship *Henry R. Mallory* and the Coast Guard cutters *Seminole* and *Tampa*, which towed the vessel to Norfolk.

October 28.—Steamship *Chicago*, with 265 passengers and crew, caught fire at sea and arrived safely at the Azores Islands. Communication was established with vessels, but assistance was not needed.

October 29.—Tug *Vigilant* disabled 150 miles off Irish coast. SOS call answered by the steamship *Ryndam*, which towed the tug to Queenstown.

November 25.—Steamship *Powhatan*, en route from Boston to Baltimore, caught fire off Block Island. Fire was controlled before arrival of Coast Guard cutters, which answered the distress call.

November 27.—Steamship *Niels Nielson* lost propeller in heavy gale. Distress calls were answered by several vessels, which assisted the disabled vessel to make port.

November 28.—Steamship *Coronado* lost propeller off Tillamook Head. Distress calls answered by Astoria, Oreg., station, which dispatched tug to assistance of disabled vessel.

December 3.—Steamship *Carolina*, Goodrich Transit Co., struck rocks off entrance to Sturgeon Bay Canal. Distress calls were received by the Manitowoc, Wis., station, which dispatched a tug to the assistance of the disabled vessel.

December 12.—Steamship *Sumner* grounded in fog off Barnegat, N. J. Six vessels responded to SOS calls, and all persons on board were saved.

December 14.—Steamship *Powhatan*, en route from Norfolk to Boston, sank in collision with unknown vessel on way to open sea. Several United States destroyers, Coast Guard cutters, and steamship *Jamestown* answered SOS calls. Crew transferred to Coast Guard vessels and passengers were taken to New York on the steamship *Jamestown*.

December 25.—Steamship *Maryland* sank at sea, position as given in SOS call 380 miles east of Sandy Hook, with crew of 34. Distress calls answered by several Coast Guard cutters, but they were unable to locate the disabled vessel.

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RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE

Washington, March 1, 1917—No. 27.

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, January 14, 1915.

To collectors of customs, radio inspectors, and others concerned:

This publication is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only. Information regarding amateur stations appears only in the annual edition of the List of Radio Stations of the United States.

The bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
E. F. SWEET,
Acting Secretary.

NEW STATIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Longitude and latitude (approximate).	Call signal.	System.	Wave lengths.	Service.	Hours.
Great Falls, Mont. ¹	O 111 10 00 N 47 35 00	KLQ....	Composite, 200....	1700	(*)	X
Isabela de Basilan, P. I. ²	.....	KHI....	.....	.....	.....	8m-5.30s
Kvichak, Alaska ³	O 156 48 00 N 59 03 00	KHB...	Kilbourne & Clark.	300,400,500, 600	(*)	X
Philadelphia, Pa. ⁴	O 75 09 44 N 39 57 06	WHE...	Marconi, 240.....	1650	(*)	9m-5s

* Limited commercial.

¹ Station operated and controlled by the Great Falls Power Co., Butte, Mont. The station is limited to communication with Butte, Thompson Falls, and Lewistown, Mont.

² Station operated and controlled by Philippine insular government, Washington, D. C.

³ Range, 125. Station operated and controlled by Alaska Packers' Association. The station is limited to communication with the stations of the Alaska Packers' Association at Naknek, Sang Point, and Clarks Point, Alaska, and vessels of the association. The station is in operation from April to October of each year.

⁴ Range, 400. Station operated and controlled by John Wanamaker. The station is operated in conjunction with Marconi's Philadelphia station, but is limited to communication with a station at New York, N. Y. (WHL).

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Vessel.	Call signal.	System.	Wave lengths.	Service.	Hours.
Admiral Wainwright ¹	WSF	.....	300, 600.	.....	.....
Astoria ²	WRL	Kilbourne & Clark, 1,000.	300, 450, 525, 600.	PG	N
Astri ³	WRN	do.	300, 450, 525, 600.	PG	N
Charles O. Jenkins ⁴	WFT	Marconi.	300, 600.	PG	.....
Druid ⁵	KYK	do.	300, 600.	PG	.....
F. B. Squire ⁶	WFK	do.	300, 600.	PG	.....
Holden Evans ⁷	KMY	Marconi, 1,000.....	300, 450, 600.	PG	X
Ituna ⁸	WPA	Halcut	.....	.....	.....
John Scully ⁹	KVT	Marconi.	300, 600.	PG	.....
Margaret ¹⁰	WRQ	Kilbourne & Clark, 1,000.	300, 450, 525, 600.	PG	N
Mary ¹¹	WRM	do.	300, 450, 525, 600.	PG	N
May ¹²	WRR	do.	300, 450, 525, 600.	PG	N
Orleans ¹³	KRZ	do.	300, 600.	PG	.....
Sagua ¹⁴	KVO	Marconi.	300, 600.	PG	.....
Santa Maria ¹⁵	KWU	do.	300, 600.	PG	.....
Sherman ¹⁶	KMQ	Marconi, 1,000.....	300, 450, 600.	PG	X
Sir Thomas Shaughnessy ¹⁷	WVW	Marconi.	300, 600.	PG	.....
Southerner ¹⁸	KJH	do.	300, 600.	PG	.....
United States ¹⁹	KZU	do.	.....	.....	.....

¹ Pacific Steamship Co., owner of vessel.

² Range, 100; rates, 4c. per word 40c. minimum per radiogram. Radio station operated and controlled by the McEachern Ship Co., owner of vessel.

³ Range, 100; rates, 4c. per word 40c. minimum per radiogram. Radio station operated and controlled by A. O. Andersen & Co., owner of vessel.

⁴ Rates, 2c. per word 20c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Jenkins Steamship Co., owner of vessel.

⁵ Rates, 4c. per word 40c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Rodman Wanamaker, owner of vessel, yacht.

⁶ Range, 150; rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service 8c. per word 80c. per radiogram. Radio station operated and controlled by the Marconi Co. Bulk Oil Transports (Inc.), owner of vessel.

⁷ Mexican Navigation & Commercial Co., owner of vessel.

⁸ Rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service 8c. per word 80c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Scully Line, Inc., owner of vessel.

⁹ Oriental Navigation Corp., owner of vessel.

¹⁰ Radio station operated and controlled by the Marconi Co. Sibiria Steamship Co., owner of vessel.

¹¹ Rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service 8c. per word 80c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Sun Co., owner of vessel.

¹² Range, 250; rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service 8c. per word 80c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Chile Exploration Co., owner of vessel.

¹³ Rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service 8c. per word 80c. minimum per radiogram. Radio station operated and controlled by the Marconi Co. Southland Steamship Co., owner of vessel.

¹⁴ Rates, 4c. per word 40c. minimum per radiogram. Radio station operated and controlled by E. H. R. Green, owner of vessel, yacht.

LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
KHB	Kvichak, Alaska.....c	WFT	Charles O. Jenkins.....b
KHI	Isabela de Basilan, P. I.....c	WFU	F. B. Squire.....b
KJH	Southerner.....b	WVU	Sir Thomas Shaughnessy.....b
KLQ	Great Falls, Mont.....c	WVE	Philadelphia, Pa.....c
KMQ	Sherman.....b	WFA	Ituna.....b
KMY	Holden Evans.....b	WRL	Astoria.....b
KRZ	Orleans.....b	WRM	Mary.....b
KVO	Sagua.....b	WRN	Astri.....b
KVT	John Scully.....b	WRQ	Margaret.....b
KWU	Santa Maria.....b	WRR	May.....b
KYK	Druid.....b	WSF	Admiral Wainwright.....b
KZU	United States.....b		

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of July 1, 1916, only.]

Station.	Call signal.	Wave lengths.	Service.	Hours.	Station controlled by—
Big Creek, Cal.....	6XV	200, 425.....	P	X	Walter Burnett and Oscar Kipf.
Chicago, Ill.....	9XG	300, 600, variable..	P	X	Austin A. Howard.
Culver, Ind.....	9YN	Variable.....	P	X	Culver Military Academy.
Decatur, Ill.....	9YJ	200, 425.....	P	X	James Millikin University.
Enterprise, Oreg.....	7ZH	200, 425.....	P	X	Orland M. Heacock.
Eureka, Ill.....	9YQ	420.....	P	X	Eureka College.
Greeley, Colo.....	9YZ	200, 500.....	P	X	State Teachers' College.
Grove City, Pa.....	8YV	200, 425, 1000.....	P	X	Grove City College.
Kansas City, Mo.....	9ZK	200, 425.....	P	X	Albert I. Graham.
Phoenix, Ariz.....	6ZP	200, 425.....	P	X	Harry K. Behn, jr.
Red Bluff, Cal.....	6ZS	200, 425.....	P	X	Herbert G. Strain.
Springfield, Mass.....	1ZK	200, 425.....	P	X	Glenn C. Sabin.
Springfield, Ohio.....	8ZQ	200, 425.....	P	X	Charles K. Brain.

SPECIAL LAND STATIONS, GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1ZK	First district: Springfield, Mass.	9XG	Ninth district: Chicago, Ill.
6XV	Sixth district: Big Creek, Cal.	9YJ	Decatur, Ill.
6ZP	Phoenix, Ariz	9YN	Culver, Ind.
6ZS	Red Bluff, Cal.	9YQ	Eureka, Ill.
7ZH	Seventh district: Enterprise, Oreg.	9YZ	Greeley, Colo.
8YV	Eighth district: Grove City, Pa.	9ZK	Kansas City, Mo.
8ZQ	Springfield, Ohio.		

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this Bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name =Name of station.

G. loc. =Geographical location: O=west longitude, N=north latitude, S=south latitude.

Call =Call letters assigned.

System=Radio system used and sparks per second.

Range =Normal range in nautical miles.

W. L. =Wave lengths assigned: Normal wave lengths in *italics*.

Service=Nature of service maintained:

PG=General public.

PR=Limited public.

P =Private.

O =Government business exclusively.

Hours =Hours of operation:

N =Continuous service.

X =No regular hours.

m =a. m. (12m=midday).

s =p. m. (12s=midnight).

Rates =Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes =Refer to notes in the Berne list.

ALTERATIONS AND CORRECTIONS.

LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ENSENADA, P. R.—Service, PG; hours, week days 8m–12m, 2s–5s, Sundays 9m–12m, 7s–8s. Note, Radio station operated and controlled by the Guanica Centrale. The station also communicates with stations at Santo Domingo City and La Romana (Dominican Republic), rate, 12c. per word no minimum.

GREAT LAKES, ILL.—W. L., 300, 600, 1000; service, PG; rates, 6c. per word 60c. minimum per radiogram.

KING COVE, ALASKA.—G. loc. (approximate), O 162° 20' 00'', N. 55° 05' 00''; range, 200; system, Kilbourne & Clark, 1,000; W. L., 300, 600, 1610, 2000; service, PG and limited commercial; hours, 8.30m–12m, 1s–5s, and at other hours when business warrants; rates, 6c. per word 60c. minimum per radiogram. Note, Radio station operated and controlled by the Pacific-American Fisheries Co. The station also communicates with stations at Akutan, Clarks Point, Hales Creek, Larsen Bay, Port Moller, Snag Point, Alockanock River, Latouche, Chignik, Nushagak, Naknek, Cordova, Ugashik, Kvichak, and Egegak, Alaska, rate 6c. per word 60c. minimum per radiogram, domestic count; night messages 75 per cent of day rate; night letters 60c. per 50 words 12c. for each additional 10 words or fraction thereof, domestic count.

KOGGIUNG, ALASKA.—Strike out all particulars.

MIAMI, FLA.—W. L., 300, 450, 600. Note, Radio station operated and controlled by the Marconi Co.

PASSAGRILLE, FLA.—Strike out all particulars.

PHILADELPHIA, PA. (WHE).—W. L., 300, 600; service, PG; hours, 9m–5s. Note, Radio station operated and controlled by the Marconi Co.

ST. PETERSBURG, FLA.—Strike out all particulars.

TUTUILA, SAMOA.—G. loc. (approximate) O 171° 00' 00'', S 14° 00' 00''; system, U. S. Navy; W. L., 600, 750; service, PG; hours, N; rate, 6c. per word, 60c. minimum per radiogram. Note, Radio station operated and controlled by the United States Naval Communication Service, Radio, Va. The station communicates with stations at Apia (Samoa), Suva (Fiji Islands), Tahiti Island, and Wahiawa (Hawaii), rate 6c. per word no minimum.

SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

ALLIANCE.—Note, Radio station operated and controlled by the Marconi Co. Fair & Moran, owner of vessel.

BEAVER (WWB).—System, Marconi, 400.

CAPTO.—Strike out all particulars.

CARLOS.—Strike out all particulars.

CASIANA.—Range, 150; system, Marconi, 1,000; W. L., 300, 600; service, PG; hours, X, rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service 8c. per word 80c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. Edward L. Doheny, owner of vessel, yacht.

DORCHESTER.—System, Marconi, 1,000; W. L., 300, 450, 600; rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service 8c. per word 80c. minimum per radiogram.

FREEPORT SULPHUR No. 2.—Service, PG; rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service 8c. per word 80c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. Freeport Sulphur Transportation Co., owner of vessel.

GRACE DOLLAR.—Strike out all particulars.

HARRY LUCKENBACH.—Note, Radio station operated and controlled by the Marconi Co. Luckenbach Co. (Inc.), owner of vessel.

H. C. FOLGER.—Range, 250; system, Marconi, 1,000; W. L., 300, 450, 600.

JULIA LUCKENBACH.—Range, 250; system, Kilbourne & Clark, 1,000; W. L., 300, 450, 525, 600; service, PG, hours, X; rates, 8c. per word 80c. minimum per radiogram. Note, Radio station operated and controlled by the Luckenbach Steamship Co. (Inc.), owner of vessel.

KLAMATH.—System, Marconi, 240; rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service 8c. per word 80c. minimum per radiogram.

LUCKENBACH No. 3.—Range, 150; system, Kilbourne & Clark, 1,000; W. L., 300, 450, 600; service, PG, hours, X; rates, 4c. per word 40c. minimum per radiogram. Note, Radio station operated and controlled by Edgar F. Luckenbach, owner of vessel, tug.

LUCKENBACH No. 5.—Range, 150; system, Kilbourne & Clark, 1,000; W. L., 300, 450, 600; service, PG; hours, X; rates, 4c. per word 40c. minimum per radiogram. Note, Radio station operated and controlled by the Luckenbach Steamship Co. (Inc.), owner of vessel.

NEWPORT (WWH).—Rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service 8c. per word 80c. minimum per radiogram.

NIRVANA.—Strike out all particulars.

NOKOMIS (WHD).—W. L., 300, 600; service, PG; rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service 8c. per word 80c. per radiogram. Note, Radio station operated and controlled by the Marconi Co. Horace E. Dodge, owner of vessel, yacht.

PANUCCO (KWM).—Range, 250; system, Marconi, 1,000; W. L., 300, 450, 600; service, PG; hours, X.

POWATAN (KQY).—Strike out all particulars.

PRESIDENT.—Range, 150; system, Marconi, 400. Note, Radio station operated and controlled by the Marconi Co. Pacific Steamship Co., owner of vessel.

PROVIDENCIA.—System, Halcun, 700; rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service 8c. per word 80c. minimum per radiogram. Note, Radio station operated and controlled by the Providencia Steamer Co., owner of vessel.

ROCHESTER.—Note, Radio station operated and controlled by the Marconi Co. Rochester Navigation Corp., owner of vessel.

SANTA ANA.—Hours, X.

SANTA MARIA (WTF).—Strike out all particulars.

SANTA ROSA.—Service, PG; rates, North and South American service, 4c. per word 40c. minimum per radiogram, transoceanic service 8c. per word 80c. minimum per radiogram. Note, Radio station operated and controlled by the Marconi Co. W. R. Grace & Co., owner of vessel.

SPEEDWELL.—Strike out all particulars.

WILLAMETTE.—Range, 100; system, Marconi, 240.

WM. G. WARDEN.—Range, 250; system, Marconi, 1,000; W. L., 300, 450, 600; hours, X.
 YOSEMITE.—Hours, X. Note, Radio station operated and controlled by the Marconi Co. Puget Sound Commercial Co. (Inc.), owner of vessel.
 YUCATAN.—Strike out all particulars.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

(Alterations and corrections to be made to the List of Radio Stations of the United States, edition of July 1, 1916, only.)

LA GRANDE, OREG.—Strike out all particulars.
 MINNEAPOLIS, MINN. (9ZE).—Call, 9XF; W. L., variable.
 NORTHAMPTON, MASS.—Strike out all particulars.
 PHILADELPHIA, PA. (3ZO).—Strike out all particulars.
 ST. LOUIS, MO. (9XC).—Strike out all particulars.
 SPRINGFIELD, ILL.—W. L., 1750.

MISCELLANEOUS.

COMMERCIAL RADIO OPERATORS LICENSED DURING MONTH OF JANUARY, 1917.

Extra first grade.

Date.	Licensee.	Address.	Serial No.	Where issued. ¹
18	*Lovejoy, Edwin Wm.....	1818 Magnolia Ave., Los Angeles, Cal.	61	Washington.

First grade.

2	*Allen, George H.....	16 Bacon St., Waltham, Mass.....	15012	New York.
10	Allen, Herbert R.....	S. S. Durham, Brooklyn, N. Y.....	15269	Brooklyn. ²
22	*Armstrong, Roy E.....	130 Lakeshore Drive, Port Arthur, Tex.	14196	New Orleans.
2	*Arnold, Eric W.....	Hewitt, N. J.....	15014	New York.
12	Ashmore, J. Wilmer.....	3408 Hamilton St., Philadelphia, Pa.	12919	Philadelphia. ²
6	Azoy, Geoffrey V.....	28 S. Maple Ave., East Orange, N. J.	15267	Brooklyn. ²
12	Barker, Julian D.....	19 Channing St., Newport, R. I.....	14300	Boston.
5	*Bassett, Joseph M.....	423 W. 22d St., New York, N. Y.....	15019	New York.
15	Batchelder, Hugh McL.....	92 Lake Ave., Melrose, Mass.....	14304	Boston.
3	*Bernstiller, Arthur C.....	Univ. of Penna., Philadelphia, Pa.....	15015	New York.
22	*Biesemeyer, Walter H.....	6th and Washington Sts., Manitowoc, Wis.	13751	Chicago.
11	*Bisgrove, William E.....	25 Elm St., New York, N. Y.....	15022	New York.
11	*Blangenburg, Adolph.....	294 Manahan St., Brooklyn, N. Y.....	15024	Do.
23	Blumberg, Ernest R. ³	Clifton, Tex.....	14913	Brooklyn. ²
2	*Bonduaux, Lucien E.....	924 E. 169th St., New York, N. Y.....	15261	Do. ²
7	*Bromley, Arthur C.....	Latouche, Alaska.....	14769	Seattle.
4	*Buchanan, J. A.....	2108 L. C. Smith Bldg., Seattle, Wash.....	14763	Do.
23	Burke, Alan W.....	40 Pollock Ave., Pittsfield, Mass.....	14308	Boston.
26	*Callahan, Francis J.....	Care Federal Telegraph Co., San Francisco, Cal.	13888	San Francisco.
19	*Cassells, Paul E.....	S. S. Jos. R. Parrott, Key West, Fla.	13256	Key West. ²
5	Cerio, Thomas.....	25 W. 125th St., New York, N. Y.....	15286	Brooklyn. ²
4	*Cisseneff, Samuel.....	611 S. Charles St., Baltimore, Md.....	12214	Baltimore.
15	*Colby, Edward B.....	132 Dodge St., Beverly, Mass.....	14303	Boston.
12	*Cowden, John.....	Siasconset, Mass.....	14298	Do.
5	*Cowden, Reuel E.....	Juneau, Alaska.....	13873	San Francisco.
30	Cox, James H.....	631 Capitol St., Vallejo, Cal.....	13104	Mare Island. ²
12	*Darlington, Edgar T.....	325 Budd St., Philadelphia, Pa.....	15025	New York.
30	Dean, Samuel W.....	4 Elliot Rd., Lexington, Mass.....	14314	Boston.
11	*du Treil, L. J. N.....	Galveston, Tex.....	14195	New Orleans.
17	Farrington, Bruce B.....	1117 Morton St., Alameda, Cal.....	13883	San Francisco.
17	*Ferson, Oliver S.....	Box 55, Miami, Fla.....	13255	Key West. ²
4	*Froberger, Laurence G.....	310 W. 26th St., New York, N. Y.....	15017	New York.
18	Gardell, Emil C.....	Oakhurst, N. J.....	15273	Brooklyn. ²
17	*Gardner, Arthur R.....	Pocasset, Mass.....	14306	Boston.

* License issued as renewal of expiring license without examination. Otherwise license issued on written examination.

¹ All licenses issued by radio inspectors of the Department of Commerce unless otherwise indicated.

² License issued by radio examining officer, Navy Department.

³ License issued in December; particulars received at Bureau too late for publication in December list.

First grade—Continued.

Date.	Licensee.	Address.	Serial No.	Where issued.
31	*Gaugh, Harry E.....	U. S. Coast Guard Cutter Manning, San Francisco, Cal.	13889	San Francisco.
3	*Gittins, Donald S.....	1852 W. 49th St., Los Angeles, Cal...	13872	Do.
16	Goldsmith, Philip H.....	12 W. 77th St., New York, N. Y.....	15272	Brooklyn. ¹
12	Goularte, Manuel L.....	Fairhaven, Mass.....	14297	Boston.
3	*Graf, Herman, jr.....	Averles, Md.....	12213	Baltimore.
23	*Grantlin, William P.....	U. S. S. Cyclops, New York, N. Y.....	12216	Do.
10	*Gussman, Allen P.....	1024 Franklin St., San Francisco, Cal.	15021	New York.
23	*Hamilton, Geo. P.....	108 Pine St., Millville, N. J.....	15029	Do.
22	*Hewlett, Palmer B.....	Hollister, Cal.....	13884	San Francisco.
12	*Holden, Harry H.....	Siasconset, Mass.....	14299	Boston.
2	*Hopper, Horace G.....	1719 W. Lexington St., Baltimore, Md.	12212	Baltimore.
12	*Jackson, Arthur E.....	8609 Kenmore Ave., Cleveland, Ohio	13741	Chicago.
15	Jenkins, Lester J.....	74 Smith St., New Bedford, Mass.....	14302	Boston.
30	Jennings, John W.....	Lake Mahopac, N. Y.....	15278	Brooklyn. ¹
25	Johnson, Thurston A.....	123 Winthrop St., Winthrop, Mass.....	14309	Boston.
9	*Johnstone, Richard.....	821 Shrader St., San Francisco, Cal.	13877	San Francisco.
20	*Keever, Joseph W.....	1620 48th Ave., San Francisco, Cal.	13885	Do.
20	*Kelland, Wesley P.....	1716 N. Calvert St., Baltimore, Md.....	12218	Baltimore.
29	Kleinberger, Richard C.....	100 Vanderbilt Ave., Stapleton, N. Y.	15276	Brooklyn. ¹
3	*Knierjemen, Joseph.....	Atco, N. J.....	12918	Philadelphia. ¹
25	Kraft, Edwin A.....	5241 11th Ave., N. E., Seattle, Wash.	14777	Seattle.
25	Krog, Albert.....	649 Poplar St., Poplar Bluff, Mo.....	13752	Chicago.
19	Lamb, Edwin S.....	Ketchikan, Alaska.....	14774	Seattle.
30	*Leonard, S. Edwin.....	10703 Hull Ave., Cleveland, Ohio.....	13755	Chicago.
3	*Lopez, Anthony.....	54 E. 105th St., New York, N. Y.....	15016	New York.
30	Lyon, William H.....	Maple St., Lexington, Mass.....	14313	Boston.
8	*Lytle, John R.....	525 Bush St., San Francisco, Cal.....	13875	San Francisco.
24	MacDuff, Sydney G.....	7 Kelvingrove Ter., Glasgow, Scotland.	15275	Brooklyn. ¹
30	*MacPherson, William D.....	549 A St., Lorain, Ohio.....	13754	Chicago.
19	Malloy, Bernard J.....	167 Sands St., Brooklyn, N. Y.....	15274	Brooklyn. ¹
15	*Martin, Patrick.....	2707 Briggs Ave., New York, N. Y.....	15027	New York.
11	Martinez y Gomez, Porfirio.....	207 Street No. 3, Habana, Cuba.....	13406	San Juan, P. R. ¹
6	*McGrath, Joseph L.....	206 Fayette St., Wollaston, Mass.....	14294	Boston.
4	McHugh, John A.....	23 Woodland Pl., White Plains, N. Y.	15263	Brooklyn. ¹
18	McKinnon, Daniel T.....	Spiketon, Wash.....	14773	Seattle.
23	*Meldrum, Herbert J.....	115 Winthrop St., Boston, Mass.....	14307	Boston.
5	*Michael, Louis J.....	82 Vanderveer St., Brooklyn, N. Y.....	15265	Brooklyn. ¹
3	Miller, Frank L.....	4626 N. Hermitage Ave., Chicago, Ill.	13748	Chicago.
4	Miller, Julius L.....	179 Marcy Ave., Brooklyn, N. Y.....	15262	Brooklyn. ¹
15	*Mowat, Alexander.....	2105 Bienville St., New Orleans, La.....	14197	New Orleans.
24	*Norman, Stacy W.....	4511 8th Ave., N. E., Seattle, Wash.	14765	Seattle.
9	*Oliver, Charles L.....	Hobart Bldg., San Francisco, Cal.....	13876	San Francisco.
29	*Onens, John F.....	Mantua, N. J.....	12217	Baltimore.
27	*O'Sullivan, James A.....	Sayville, N. Y.....	15031	New York.
3	Parker, Perry.....	Port Angeles, Wash.....	14766	Seattle.
24	Peregrine, Clarence A.....	866 32d St., Oakland, Cal.....	13887	San Francisco.
18	*Perry, Edgar D.....	Underwood, Wash.....	14767	Seattle.
5	*Phair, Richard J.....	2265 Mission St., San Francisco, Cal.	13874	San Francisco.
12	*Phillips, Everett E.....	Box 593, S. San Francisco, Cal.....	13879	Do.
10	*Pohl, Julius A.....	303 Hennen Annex, New Orleans, La.	14194	New Orleans.
15	Preiss, Charles E.....	473 Central Ave., Brooklyn, N. Y.....	15271	Brooklyn. ¹
23	Prine, Forest.....	1318 7th Ave., Seattle, Wash.....	14775	Seattle.
5	*Redfern, Otto R.....	209 Garside St., Newark, N. J.....	15018	New York.
5	*Renard, Edgar B.....	Radio Station, Tela, Honduras.....	14192	New Orleans.
30	*Reynolds, Harry M.....	Care Alaska Steamship Co., Seattle, Wash.	14788	Seattle.
27	*Ritschie, Hans Carl J.....	153 1st St., Hoboken, N. J.....	15030	New York.
12	*Rodman, Harold L.....	409 W. Queen St., Inglewood, Cal.....	13880	San Francisco.
5	Rosenthal, Charles S.....	909 Jefferson Ave., Brooklyn, N. Y.....	15264	Brooklyn. ¹
12	Russell, Adam.....	1 Byron St., Worcester, Mass.....	14301	Boston.
25	Russell, Conrad A.....	Valparaiso, Ind.....	13753	Chicago.
29	Schaefer, Charles M.....	Box 256, Sayville, N. Y.....	15277	Brooklyn. ¹
11	Semons, Roger W.....	2 Waverly Ave., Cliftondale, Mass.....	14296	Boston.
12	Shannon, Frank.....	5308 Haverford Ave., Philadelphia, Pa	12921	Philadelphia. ¹
11	*Snow, Herbert E.....	Stapleton, N. Y.....	15023	New York.
3	Stagg, Umberto K.....	Noroton Heights, Conn.....	14310	Boston.
5	*Stewart, John A.....	La Ceiba, Spanish Honduras.....	14193	New Orleans.
23	Sturdevant, Leland W.....	Care Alaska Packers Assn., San Francisco, Cal.	13886	San Francisco.
5	Sullivan, John F.....	485 E. 6th St. Boston, Mass.....	14293	Boston.
11	*Sunderland, Wayland D.....	303 Hollow Ave., Seattle, Wash.....	14760	Seattle.
24	Swenson, Joseph.....	8040 Meridian Ave., Seattle, Wash.....	14776	Do.
16	*Swett, Walter J.....	83 Chelsea St., Charlestown, Mass.....	14305	Boston.

* License issued as renewal of expiring license without examination. Otherwise license issued on written examination.

¹ Licence issued by radio examining officer, Navy Department.

First grade—Continued.

Date.	Licensee.	Address.	Serial No.	Where issued.
18	*Talbot, Norman D.....	25 Elm St., New York, N. Y.....	12215	Baltimore.
10	*Temple, Otto C.....	82 Himrod St., Brooklyn, N. Y.....	15270	Brooklyn. ¹
11	Theofan, Costas S.....	200 Columbus Ave., Boston, Mass.....	14295	Boston.
2	*Thompson, Maurice.....	Madison Apts., 11th St., San Pedro, Cal.	13871	San Francisco.
31	*Thompson, Thomas B.....	Care Alaska Steamship Co., Seattle, Wash.	14779	Seattle.
16	*Ticknor, Reginald.....	San Francisco, Cal.....	13882	San Francisco.
12	Todd, Stedman F.....	415 Hillside Court, Piedmont, Cal.....	13881	Do.
12	Walton, Kenneth B.....	101 Dudley Ave., Narberth, Pa.....	12920	Philadelphia. ¹
26	*Ward, Frank A.....	321 St. Charles St., New Orleans, La.....	14198	New Orleans.
2	*Warnock, Archie D.....	118 W. Myrtle St., Hanford, Cal.....	15026	New York.
2	*West, Howard B.....	479 Church St., Long Branch, N. J.....	15013	Do.
28	*Wheeler, R. L. ¹	Little Falls, N. Y.....	15153	Norfolk.
22	*Wilkinson, Frank O.....	309 19th St., Milwaukee, Wis.....	13750	Chicago.
6	Williams, Harold A.....	Belmont Ave., Floral Park, N. Y.....	15268	Brooklyn. ¹
13	*Williamson, Grover.....	Marshfield, Oreg.....	14770	Seattle.
11	*Wolfe, Albert E.....	East San Pedro, Cal.....	13878	San Francisco.

Second grade.

10	Bechloff, Claude B.....	106 Walnut St., Ridgewood, N. J.....	13845	Brooklyn. ¹
18	Benson, Lester A.....	4156 Shaw Ave., St. Louis, Mo.....	12397	St. Louis.
18	Blatterman, Headlee.....	6172 Westminster Pl., St. Louis, Mo.....	12398	Do.
5	Bylander, Sven A.....	1414 Abratraz Ave., Berkeley, Cal.....	13226	San Francisco.
24	Carruthers, David.....	135 Waverly Pl., New York, N. Y.....	13352	Brooklyn. ¹
22	Choicener, Theodore R.....	615 Hancock St., Brooklyn, N. Y.....	13849	Do. ¹
12	Dahl, Chester W.....	160 Grenville St., New Bedford, Mass.....	12074	Boston.
30	Driscoll, Patrick J.....	19 Liberty Ave., Dongan Hills, N. Y.....	13354	Brooklyn. ¹
9	Elwell, Todd.....	401 E. 36th St., Paterson, N. J.....	13844	Do. ¹
2	Falco, Charles C.....	140 Sands St., Brooklyn, N. Y.....	13848	Do. ¹
19	Finchout, Fred.....	1310 E. New York St., Indianapolis, Ind.	12399	Indianapolis.
4	Grummet, Melvin L.....	9525 Fourth Ave., Brooklyn, N. Y.....	13839	Brooklyn. ¹
16	Henkin, Ascher.....	355 Stockton St., Brooklyn, N. Y.....	13847	Do. ¹
22	Hoff, Russell.....	298 Western Ave., Albany, N. Y.....	13850	Do. ¹
18	Johnson, Geo. F.....	625 Black Ave., Springfield, Ill.....	12396	St. Louis.
9	Knights, Alexander H.....	862 Hewitt Pl., New York, N. Y.....	13842	Brooklyn. ¹
16	Lambert, Kenneth B.....	11 Glenview Ave., Iowa City, Iowa.....	12394	Davenport, Iowa.
26	MaDan, Edwin.....	7402 17th Ave., Brooklyn, N. Y.....	13353	Brooklyn. ¹
29	Mollvaine, Victor C.....	208 Verne St., Tampa, Fla.....	12154	Baltimore.
5	Moy, Donald W.....	174 Second St., Milwaukee, Wis.....	13749	Chicago.
16	O'Brien, Lester E.....	Wilkinson, Wash.....	12277	Seattle.
5	O'Herin, John M.....	25 W. 125th St., New York, N. Y.....	13841	Brooklyn. ¹
21	Ostreich, Thaddeus J.....	116 Waverly Pl., New York, N. Y.....	13351	Do. ¹
5	Powell, Edwin L.....	216 Spruce Ave., Takoma Park, Md.....	12007	Washington.
4	Salm, Salm.....	53 E. 117th St., New York, N. Y.....	13840	Brooklyn. ¹
10	Shipley, Reid S.....	153 E. 86th St., New York, N. Y.....	13847	Do. ¹
9	Skeete, Benjamin B.....	39 Lexington Ave., Brooklyn, N. Y.....	13843	Do. ¹
19	Sommer, James McC.....	2538 N. Talbott Ave., Indianapolis, Ind.	12400	Indianapolis.
30	Toft, Frank.....	Mountain View, Cal.....	13227	San Francisco.
4	Valentine, Milton L.....	Bayside, N. Y.....	13838	Brooklyn. ¹
16	Wittiek, Eugene C.....	104 6th Ave., Moline, Ill.....	12395	Davenport, Iowa.

* License issued as renewal of expiring license without examination. Otherwise license issued on written examination.

¹ License issued by radio examining officer, Navy Department.

² License issued in December; particulars received at Bureau too late for publication in December list.

NOTICE TO RADIO OPERATORS.

Until further notice, the examining of radio operators for all grades of licenses at the Boston, Brooklyn, Philadelphia, Charleston, New Orleans, Mare Island, and Bremerton Navy Yards, the Key West naval radio station, and Fort Wood, N. Y., will be discontinued.

Examinations formerly given by the radio examining officers at these points will be conducted by the radio inspectors of the Department of Commerce, exclusively. All applicants for radio operator licenses should apply to the nearest radio inspector, whose addresses are given below:

Boston, Mass.....	Seventh floor, United States Customhouse.
New York, N. Y.....	Room 603, United States Customhouse.
Baltimore, Md.....	Room 15, United States Customhouse.
Washington, D. C.....	Room 1010, Department of Commerce.
Norfolk, Va.....	Room 222, Citizens' Bank Building.
New Orleans, La.....	Room 235, United States Customhouse.
San Francisco, Cal.....	Room 526, United States Customhouse.
Seattle, Wash.....	Room 204, Federal Building.
Chicago, Ill.....	Room 629, Federal Building.

RADIO APPARATUS FOR DUTCH STEAMSHIP COMPANIES.

Holland's larger steamship companies have recently established a corporation called the Netherlands Telegraphic Co., "Radio-Holland," for the purpose of undertaking the manufacture of radio apparatus for use on Dutch vessels. It is hoped thus to free Dutch shipping from the dependence on foreign companies.

The new "Radio-Holland" is capitalized at \$400,000. The directors comprise representatives of the Holland-America Line, Holland Lloyd, Royal Packet, West Indian Mail, Royal Holland Steamboat, and Java-China-Japan Line.

CLASSIFICATION OF SPECIAL STATIONS.

There seems to be some misunderstanding concerning the classification of special stations, as provided in the Laws and Regulations, edition of July 27, 1914, pages 55 and 56.

Experiment stations.—In the case of experiment stations, such licenses are issued for the purpose of conducting experiments for the development of the science of radio communication, or the apparatus pertaining thereto, to carry on special tests, using any amount of power or any wave lengths, at such hours and under such conditions as will insure the least interference, and where the owners of such stations desire to conduct the usual amateur communications, or engage in the amateur relay league work, this work should be performed on certain authorized wave lengths covered by a license issued for the purpose. It has been found that practically all experiments for the development of radio apparatus can be conducted on an artificial antenna. It may be necessary on special occasions to make tests with some other station for the purpose of determining some special characteristic of the station, this, of course, being permitted.

Technical and training school stations.—In the case of technical and training school stations, these licenses are issued principally for the purpose of training radio operators, and it is believed that most of this work can be conducted without exceptional power and on wave lengths not exceeding 200 meters. Some of the schools turning out the largest number of operators have not found it necessary to do outside transmitting. This part of the training is conducted on buzzers arranged on an interior circuit. Should such stations desire to take part in the amateur relay league work, they should apply for special amateur licenses. Relay work should be conducted on a special wave length designated by the bureau, and ordinary outside communications should be conducted on a wave length not exceeding 200 meters.

Special amateur stations.—In the case of special amateur stations, a wave length in excess of 200 meters is permitted for the special amateur relay work, or emergency work such as that performed in the flood districts, and ordinary communications between special amateur and general amateur stations should not in any case be conducted on wave lengths in excess of 200 meters.

It should be borne in mind by applicants for experiment, technical, and training school, and special amateur station licenses, that the special wave lengths in excess of 200 meters, or power in excess of one-half kilowatt or one kilowatt, depending upon the location of the station, can not be granted for ordinary amateur work, and where stations given special licenses make use of this special power and these special wave lengths for ordinary amateur communication, and such stations are reported to the Bureau for causing interference, their station licenses may be suspended or revoked.

It should also be understood by the holders of special station licenses along the coast that the wave lengths of 300 meters and 600 meters authorized for these stations are solely for the purpose of "listening in" as required by the regulations, and are to be used for transmitting only in the event of an emergency such as is contemplated in the regulations.

Where it is desired and appears necessary that two classes of license be issued to a station, two applications should be sent in, one to cover each class of service, as, for example, experiment and special amateur, or experiment and general amateur.

Recently, there have been several applications received at the Bureau for experiment licenses where it appeared that the stations were to be used for limited commercial service.

All applicants for special licenses should furnish the Bureau, through the radio inspector, a statement covering completely the service which is to be conducted by the stations, and indicating the necessity for special power and wave lengths.

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OCT 17 1919

RADIO SERVICE BULLETIN

ISSUED MONTHLY BY BUREAU OF NAVIGATION, DEPARTMENT OF COMMERCE.

Washington, August 1, 1919—No. 28.

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DEPARTMENT OF COMMERCE,
BUREAU OF NAVIGATION,
Washington, August 1, 1919.

To collectors of customs, radio inspectors, and others concerned:

This publication, which was discontinued during the war, is issued monthly by the Bureau of Navigation, Department of Commerce, and distributed to the United States officers engaged in or concerned with the enforcement of the radio laws for their guidance and instruction, and to those concerned with the operation of Government and commercial radio stations for their information.

The Radio Service Bulletin supersedes the quarterly supplements to the List of Radio Stations of the United States and contains information concerning Government, commercial, and special stations only.

The Bulletin contains tables of new stations, alterations, and corrections under headings, so that the List of Radio Stations of the United States and the List of Radiotelegraph Stations, published by the international bureau at Berne, may be brought up to date. Additions, alterations, and corrections should be entered in these two publications promptly on receipt of the Bulletin.

Amendments to or changes in the Radio Laws and Regulations of the United States (edition of July 27, 1914) are printed in this Bulletin in such a manner that they may be clipped and pasted in their proper places in that publication.

Items of general interest concerning the enforcement of the radio laws are printed in the Bulletin from time to time, as occasion warrants.

E. T. CHAMBERLAIN,
Commissioner of Navigation.

Approved:
WILLIAM C. REDFIELD,
Secretary of Commerce.

NEW STATIONS.

COMMERCIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of June 15, 1919, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	Operated and controlled by—	Address.
Port Beauclaire.....	KWO	Beauclaire Packing Co.	Seattle, Wash.
Port Chatham.....	KWH	Alaska Ocean Food Co.	Grand Trunk Pacific Dock, Seattle, Wash.

COMMERCIAL SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Additions to the List of Radio Stations of the United States, edition of June 15, 1919, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Name of vessel.	Call signal.	Rates.		Service.	Hours.	Owner of vessel.	Station controlled by—
		North and South American service.	Trans-oceanic service.				
		Cents.	Cents.				
Arenas.....	KIRM	4	4	PG	X	U. S. Shipping Board.	U. S. Navy.
Assinippi.....	KIPB	4	4	PG	X	.....do.....	Do.
Bathalum.....	KIQT	4	4	PG	X	.....do.....	Do.
Bathgate.....	KIQS	4	4	PG	X	.....do.....	Do.
Bay Head.....	KINT	4	4	PG	X	.....do.....	Do.
Belfort.....	KIQB	4	4	PG	X	.....do.....	Do.
Boston Bridge.....	KINS	4	4	PG	X	.....do.....	Do.
Burnwell.....	KIMS	4	4	PG	X	.....do.....	Do.
Calno.....	KINV	4	4	PG	X	.....do.....	Do.
Cambridge.....	KIRR	4	4	PG	X	.....do.....	Do.
Canumset.....	KIQD	4	4	PG	X	.....do.....	Do.
Cleopatra.....	KIQL	4	4	PG	X	.....do.....	Do.
Cold Spring.....	KIQK	4	4	PG	X	.....do.....	Do.
Corson.....	KIQV	4	4	PG	X	.....do.....	Do.
Costigan.....	KINF	4	4	PG	X	.....do.....	Do.
Cotati.....	KIQF	4	4	PG	X	.....do.....	Do.
Cushnoc.....	KIMJ	4	4	PG	X	.....do.....	Do.
Davidson County.....	KINX	4	4	PG	X	.....do.....	Do.
Delavan.....	KIRQ	4	4	PG	X	.....do.....	Do.
Derbyline.....	KIRT	4	4	PG	X	.....do.....	Do.
Dochet.....	KIMR	4	4	PG	X	.....do.....	Do.
Doylestown.....	KIPG	4	4	PG	X	.....do.....	Do.
East Side.....	KIMQ	4	4	PG	X	.....do.....	Do.
Edna.....	KIPT	4	4	PG	X	.....do.....	Do.
Eelbeck.....	KINQ	4	4	PG	X	.....do.....	Do.
Fluor Spar.....	KIQX	4	4	PG	X	.....do.....	Do.
Ft. Logan.....	KIQJ	4	4	PG	X	.....do.....	Do.
Geo. H. Jones.....	KIPS	4	4	PG	X	.....do.....	Do.
Haddon.....	KIRN	4	4	PG	X	.....do.....	Do.
Huachuca.....	KIMX	4	4	PG	X	.....do.....	Do.
Hugoton.....	KIQR	4	4	PG	X	.....do.....	Do.
Hyannis.....	KINC	4	4	PG	X	.....do.....	Do.
John Fna.....	KIRS	4	4	PG	X	.....do.....	Do.
Lake Cannonsburg.....	KIMV	4	4	PG	X	.....do.....	Do.
Lake Fablus.....	KIPQ	4	4	PG	X	.....do.....	Do.
Lake Fabyan.....	KINJ	4	4	PG	X	.....do.....	Do.
Lake Fackler.....	KIQP	4	4	PG	X	.....do.....	Do.
Lake Fairfax.....	KIRV	4	4	PG	X	.....do.....	Do.
Lake Farber.....	KIRB	4	4	PG	X	.....do.....	Do.
Lake Farmingdale.....	KIPZ	4	4	PG	X	.....do.....	Do.
Lake Farragut.....	KIQN	4	4	PG	X	.....do.....	Do.
Lake Festina.....	KEQP	4	4	PG	X	.....do.....	Do.
Lake Frolono.....	KEGN	4	4	PG	X	.....do.....	Do.
Lake Frumet.....	KIRJ	4	4	PG	X	.....do.....	Do.
Lake Gazette.....	KIPN	4	4	PG	X	.....do.....	Do.
Lake Glasco.....	KINK	4	4	PG	X	.....do.....	Do.
Lehigh.....	KINM	4	4	PG	X	.....do.....	Do.
Liberty Glo.....	KIQZ	4	4	PG	X	.....do.....	Do.
Luxpalle.....	KIPV	4	4	PG	X	.....do.....	Do.
Maiden Creek.....	KIPX	4	4	PG	X	.....do.....	Do.
Mount Evans.....	KIMT	4	4	PG	X	.....do.....	Do.

COMMERCIAL SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS—
continued.

Name of vessel.	Call signal.	Rates.		Service.	Hours.	Owner of vessel.	Station controlled by—
		North and South American service.	Trans-oceanic service.				
		<i>Cents.</i>	<i>Cents.</i>				
Nedmac.....	KIQM	4	4	PG	X	U. S. Shipping Board.	U. S. Navy.
New Britain.....	KIRG	4	4	PG	X	.....do.....	Do.
Newton.....	KIRC	4	4	PG	X	.....do.....	Do.
Ogontz.....	KINB	4	4	PG	X	.....do.....	Do.
Olen.....	KINR	4	4	PG	X	.....do.....	Do.
Pawtucket.....	KINZ	4	4	PG	X	.....do.....	Do.
Pelican.....	KIRL	4	4	PG	X	.....do.....	Do.
Pere Marquette 8.....	KINL					Chicago & South Haven S. S. Co.	Do.
Pipestone County.....	KIMZ	4	4	PG	X	U. S. Shipping Board.	Do.
Pontchartrain.....	KIMP	4	4	PG	X	.....do.....	Do.
Pontia.....	KIPC	4	4	PG	X	.....do.....	Do.
Pyramus.....	KIPL	4	4	PG	X	.....do.....	Do.
Rock Island.....	KIND	4	4	PG	X	.....do.....	Do.
Salvation Lass.....	KIMN	4	4	PG	X	.....do.....	Do.
Santa Leonora.....	KIML	4	4	PG	X	.....do.....	Do.
S. B. Hunt.....	KIPR	4	4	PG	X	.....do.....	Do.
Sharon.....	KIRK	4	4	PG	X	.....do.....	Do.
Strathnaver.....	KIPP	4	4	PG	X	.....do.....	Do.
Thala.....	KIQQ	4	4	PG	X	.....do.....	Do.
Utina.....	KIPM	4	4	PG	X	.....do.....	Do.
Vacuum II.....	KIMK	4	4	PG	X	.....do.....	Do.
Waco.....	KIRP	4	4	PG	X	.....do.....	Do.
Wallkill.....	KIPD	4	4	PG	X	.....do.....	Do.
Watertown.....	KING	4	4	PG	X	.....do.....	Do.
West Aleta.....	KIQG	4	4	PG	X	.....do.....	Do.
West Cayote.....	KIRF	4	4	PG	X	.....do.....	Do.
West Chatala.....	KIPJ	4	4	PG	X	.....do.....	Do.
West Hepburn.....	KINP	4	4	PG	X	.....do.....	Do.
West Ison.....	KINN	4	4	PG	X	.....do.....	Do.
Westmoreland.....	KIQC	4	4	PG	X	.....do.....	Do.
West Segovia.....	KIPK	4	4	PG	X	.....do.....	Do.
Winyah.....	KIMM	4	4	PG	X	.....do.....	Do.
Woodmansie.....	KIPF	4	4	PG	X	.....do.....	Do.

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

[b=ship station; c=land station.]

Call signal.	Name.	Call signal.	Name.
KEGN	Lake Frolono.....b	KIPP	Strathnaver.....b
KEQP	Lake Festina.....b	KIPQ	Lake Fablus.....b
KIMJ	Cushnoc.....b	KIPR	S. B. Hunt.....b
KIMK	Vacumm II.....b	KIPS	Geo. H. Jones.....b
KIML	Santa Lenora.....b	KIPT	Edna.....b
KIMM	Winyah.....b	KIPX	Malden Creek.....b
KIMN	Salvation Lass.....b	KIPV	Luxpalle.....b
KIMP	Pontchartrain.....b	KIPZ	Lake Farmingdale.....b
KIMQ	East Side.....b	KIQB	Belfort.....b
KIMR	Dochet.....b	KIQC	Westmoreland.....b
KIMS	Burnwell.....b	KIQD	Canumset.....b
KIMT	Mount Evans.....b	KIQE	Cotati.....b
KIMV	Lake Cannonsburg.....b	KIQF	West Aleta.....b
KIMX	Huachuca.....b	KIQJ	Ft. Logan.....b
KIMZ	Piestone County.....b	KIQK	Cold Spring.....b
KINB	Ogontz.....b	KIQL	Cleopatra.....b
KINC	Hyannis.....b	KIQM	Nedmac.....b
KIND	Rock Island.....b	KIQN	Lake Farragut.....b
KINF	Costigan.....b	KIQP	Lake Packler.....b
KING	Watertown.....b	KIQQ	Thala.....b
KINJ	Lake Fabyan.....b	KIQR	Hugoton.....b
KINK	Lake Glasco.....b	KIQS	Bathgate.....b
KINL	Pere Marquette 8.....b	KIQT	Bathalum.....b
KINM	Lehigh.....b	KIQV	Corson.....b
KINN	West Ison.....b	KIQX	Fluor Spar.....b
KINP	West Hepburn.....b	KIQZ	Liberty Glo.....b
KINQ	Eelbeck.....b	KIRB	Lake Farber.....b
KINR	Olen.....b	KIRC	Newton.....b
KINS	Boston Bridge.....b	KIRF	West Cayote.....b
KINT	Bay Head.....b	KIRG	New Britain.....b
KINV	Calno.....b	KIRJ	Lake Frumet.....b
KINX	Davidson County.....b	KIRK	Sharon.....b
KINZ	Pawtucket.....b	KIRL	Pelican.....b
KIPB	Assinippi.....b	KIRM	Arenas.....b
KIPC	Pontia.....b	KIRN	Haddon.....b
KIPD	Walkill.....b	KIRP	Waco.....b
KIPF	Woodmansie.....b	KIRQ	Delavan.....b
KIPG	Doylestown.....b	KIRR	Cambridge.....b
KIPJ	West Chataha.....b	KIRS	John Ena.....b
KIPK	West Segovia.....b	KIRT	Derbyline.....b
KIPL	Pyramus.....b	KIRV	Lake Fairfax.....b
KIPM	Utina.....b	KWH	Port Chatham, Alaska.....c
KIPN	Lake Gazette.....b	KWO	Port Beauchaire, Alaska.....c

GOVERNMENT LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of June 15, 1919, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Station.	Call signal.	Operated and controlled by—	Address.
Bellefonte, Pa. ¹	WWQ	Post Office Department.....	Washington, D. C.
Chicago, Ill. ¹	WWG	do.....	Do.
Cleveland, Ohio ¹	WVO	do.....	Do.
College Park, Md. ¹	WWX	do.....	Do.
Newark, N. J. ¹	WWU	do.....	Do.
Seward, Alaska.....	NPV	U. S. Navy.....	Do.

¹ Aeroplane control station.

GOVERNMENT SHIP STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of June 15, 1919.]

Name of ship.	Call signal.	Name of ship.	Call signal.
Abel P. Upshur.....	NUJD	Old Dominion.....	NUKN
Alameda.....	NUGJ	Overton.....	NUJN
Atlantic.....	NENN	Patoka.....	NUGN
Barker.....	NUJK	Ramapo.....	NUGP
Chesapeake.....	NUJB	Rapidan.....	NUGQ
Doyen.....	NUJS	Relief Light Vessel No. 2.....	NUGF
George E. Badger.....	NUJG	Robert Smith.....	NUKB
Henshaw.....	NUJQ	Salinas.....	NUGR
Hulbert.....	NUKD	Sapaleo.....	NUGS
Hunt.....	NUJF	Sepulga.....	NUGT
James K. Paulding.....	NUJM	Shirk.....	NUJV
Kaweah.....	NUGK	Smith Thompson.....	NUJJ
Kidder.....	NUJX	Sturtevant.....	NUJP
Laramie.....	NUGL	Tippicanoe.....	NUGV
La Valette.....	NUJT	Tracy.....	NUJL
Mattole.....	NUMG	Trinity.....	NUGX
Meyer.....	NUJR	Wasmuth.....	NUKC
Nahunta.....	NUKM	W. F. Babcock.....	NUKG
Noa.....	NUKF		

GOVERNMENT LAND AND SHIP RADIO STATIONS, ALPHABETICALLY BY CALLS.

[Additions to the List of Radio Stations of the United States, edition of June 15, 1919. c=land station; b=ship station.]

Call signal.	Name of station.	Call signal.	Name of station.
NPV	Seward, Alaska.....c	NUJN	Overton.....b
NUGF	Relief Light Vessel No. 2.....b	NUJP	Sturtevant.....b
NUGJ	Alameda.....b	NUJQ	Henshaw.....b
NUGK	Kaweah.....b	NUJR	Meyer.....b
NUGL	Laramie.....b	NUJS	Doyen.....b
NUMG	Mattole.....b	NUJT	La Valette.....b
NUGN	Patoka.....b	NUJV	Shirk.....b
NUGP	Ramapo.....b	NUJX	Kidder.....b
NUGQ	Rapidan.....b	NUKB	Robert Smith.....b
NUGR	Salinas.....b	NUKC	Wasmuth.....b
NUGS	Sapaleo.....b	NUKD	Hulbert.....b
NUGT	Sepulga.....b	NUKF	Noa.....b
NUGV	Tippicanoe.....b	NUKG	W. F. Babcock.....b
NUGX	Trinity.....b	NUKM	Nahunta.....b
NUJB	Chesapeake.....b	NUKN	Old Dominion.....b
NUJD	Abel P. Upshur.....b	NENN	Atlantic.....b
NUJF	Hunt.....b	WWG	Chicago, Ill. ¹.....c
NUJG	George E. Badger.....b	WWO	Cleveland, Ohio ¹.....c
NUJJ	Smith Thompson.....b	WWU	Newark, N. J. ¹.....c
NUJK	Barker.....b	WWQ	Bellefonte, Pa. ¹.....c
NUJL	Tracy.....b	WWX	College Park, Md. ¹.....c
NUJM	James K. Paulding.....b		

¹ Aeroplane control station of Post Office Department.

SPECIAL LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Additions to the List of Radio Stations of the United States, edition of June 15, 1919, only.]

Station.	Call signal.	Station controlled by—
College Station, Tex.....	5YA	Agricultural and Mechanical College of Texas.
Atlanta, Ga.....	4YA	Georgia School of Technology.
Agricultural College, N. Dak.....	9YB	North Dakota Agricultural College.
Lafayette, Ind.....	9YA	Purdue University.
Kingston, R. I.....	1YA	Rhode Island State College.
Tuscaloosa, Ala.....	5YB	University of Alabama.
Los Angeles, Calif.....	6YA	University of Southern California.
Morgantown, W. Va.....	8YA	West Virginia University.

SPECIAL LAND STATIONS GROUPED BY DISTRICTS.

Call signal.	District and station.	Call signal.	District and station.
1YA	First district: Kingston, R. I.	6YA	Sixth district: Los Angeles, Calif.
4YA	Fourth district: Atlanta, Ga.	8YA	Eighth district: Morgantown, W. Va.
5YA	Fifth district: College Station, Tex.	9YA	Ninth district: Lafayette, Ind.
5YB	Tuscaloosa, Tex.	9YB	Agricultural College, N. Dak.

ABBREVIATIONS.

The necessary corrections to the List of Radio Stations of the United States and to the International List of Radiotelegraph Stations, appearing in this Bulletin under the heading "Alterations and corrections," are published after the stations affected in the following order:

Name = Name of station.

G. loc. = Geographical location: O=west longitude, N=north latitude, S=south latitude.

Call = Call letters assigned.

System = Radio system used and sparks per second.

Range = Normal range in nautical miles.

W. L. = Wave lengths assigned: Normal wave lengths in italics.

Service = Nature of service maintained:

PG = General public.

PR = Limited public.

P = Private.

O = Government business exclusively.

Hours = Hours of operation:

N = Continuous service.

X = No regular hours.

m = a. m. (12m=midday).

s = p. m. (12s=midnight).

Rates = Ship or coast charges, in cents: c=cents. (The rates in the international list are given in francs and centimes. For approximate purposes, 1 franc equals 20 cents and 5 centimes equal 1 cent.)

Notes = Refer to notes in the Berne list.

ALTERATIONS AND CORRECTIONS.

COMMERCIAL SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 15, 1919, and to the International List of Radiotelegraph Stations published by the Berne bureau.]

Accomac (KMOE).

Anne W. (WMU).

City of South Haven (WDI).

Diana (KZM).

Farnam (KQIE).

Goliath (WPG).

Great Northern (WIR).

Isthmian (WKI).

Luckenbach No. 1 (KEO).

Luckenbach No. 2 (KGC).

Luckenbach No. 3 (KGF).

Luckenbach No. 4 (KGG).

Luckenbach No. 5 (KEV).

Lydonia (WDY).

Mackinaw (WHW).

May (KZI).

Nevada (WFD).

Niagara (KYN).

Nokomis (WHD).

Northern Pacific (WIM).

Orleanian (KON).

Roamer (KZN).

Santa Cristina (WHO).

Sayonara (KYJ).

Sialia (WFY).

Theodore Roosevelt (WCT).

Tyee (WPC).

Virginia (WFH).

Virginia (KFR).

Wakiva (KYI).

Warrior (KYW).

Strike out all particulars of the above-named vessels.

Huron (WCH), owner Huron S. S. Co. (Inc.).	Socony No. 84, correct name Socony 84.
Margaret (WRQ), owner Margaret Ship Co. (Inc.).	Socony No. 85, correct name Socony 85.
Panuco (KWM), owner Atlantic Gulf & West Indies S. S. Lines.	Socony No. 88, correct name Socony 88.
Parthian (WCE), owner U. S. Shipping Board.	Socony No. 89, correct name Socony 89.
Rosewood (WSH), owner Pacific-American Fisheries.	Socony No. 90, correct name Socony 90.
Socony No. 82, correct name Socony 82.	Socony No. 92, correct name Socony 92.
Socony No. 83, correct name Socony 83.	Socony No. 94, correct name Socony 94.
	S. M. Spaulding, correct orthography S. M. Spaulding.
	Suruga, owner New York & Oriental S. S. Co.
	Susanna, correct orthography Susana.

COMMERCIAL SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all particulars following the call signals, KEO, KEV, KFR, KGC, KGF, KGG, KMOE, KON, KQIE, KYI, KYJ, KYN, KYW, KZI, KZM, KZN, WCT, WDY, WFD, WFH, WFY, WHD, WHO, WHW, WIM, WIR, WKI, WPC, WPG, WDI, and WMU. KRUU, *read* Socony 88; KSAA, *read* Socony 89; KVAO, *read* Socony 83; KVAI, *read* Socony 82; WCOE, *read* Socony 84; WCOI, *read* Socony 92; WKAE, *read* Socony 85; WTII, *read* Socony 90; WTIO, *read* Socony 94; KNX, *read* Susana; and WKG, *read* S. M. Spaulding.

GOVERNMENT LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS.

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 15, 1919.]

Light Vessel No. 86, Great Round Shoals, Mass., *read* Relief Light Vessel No. 86, (NAJJ).

Relief Light Vessel No. 66, *read* Light Vessel No. 66, Great Round Shoals, Mass. (NABJ).

GOVERNMENT SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS.

[Alterations and corrections to be made to the list of Radio Stations of the United States, edition of June 15, 1919.]

Accomac (NTH).	Luella (NALJ).
Askawake (NEPP).	Nashville (NKY).
Bache (NLK).	Natoma (NUGG).
Christabel (NMQ).	Oneida (NSO).
Cizenia (NUBP).	Paducah (NOG).
Corozal (NEGX).	Pathfinder (NLJ).
Crook (NECX).	Pequot (NEVN).
Cuttyhunk (NSA).	Piqua (NMU).
Decatur (NJC).	Polarland (NEMM).
Druid (NDP).	Polar Sea (NANL).
Eastern Cross (NEZB).	Princeton (NEGT).
Eddelyn (NEDV).	Remus (NENR).
Ellington (NLN).	Robert McCurdy (NAXB).
Federal (NEGP).	Rondo (NBK).
Fort Snelling (NEVF).	Roosevelt (NLR).
Forward (NUFS).	Santee (NAPD).
Helenita (NAKK).	Sao Paulo (NEGJ).
Herbert L. Pratt (NANM).	Seatia (NCQ).
Hermes (NRP).	Sherman (NECJ).
Indianapolis (NISD).	Sixaola (NENC).
Isis (NQA).	Soestdijk (NAPJ).
Kiowa (NAKR).	Sultana (NMX).
Lake Champlain (NHR).	S. P. 651 (Atlantic II) (NOR).
Lake Dymmer (NEMF).	Warren (NEBN).
Lake Lillian (NESF).	Wawalona (NEQN).
Lake Sunapee (NECS).	Westwood (NAQL).
Liscum (NECL).	Winterswijk (NEGV).
Los Angeles (NSG).	

Strike out all particulars of the above-named vessels.

Kewaydin (NAXN), correct orthography
Kemaydin.
S. P. 411 (Sussanne), correct orthography
S. P. 411 (Susanne).
S. P. 568 (Magnet) (NUBG), correct
number 563.

Tatnuck (NETQ), correct orthography
Tatmuck.
Truxtun, correct orthography Truxtun.
Wilmette, correct orthography Willmette.

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS.

Strike out all particulars following the call signals, NBK, NCQ, NDP, NJC, NHR, NKY, NLJ, NLK, NLN, NLR, NMQ, NMU, NMX, NOG, NOR, NQA, NRP, NSA, NSG, NSO, NTH, NAKK, NAKR, NALJ, NANL, NANM, NAPD, NAPJ, NAQL, NAXB, NEBN, NECJ, NECL, NECS, NECX, NEDV, NEGJ, NEGP, NEGT, NEGV, NEGX, NEMF, NEMM, NENC, NENR, NEPP, NEQN, NESF, NEVF, NEVN, NEZB, NISD, NUBP, NUFS, and NUGG. NUS, *read* Truxtun; NABJ, *read* L. V. No. 66, Great Round Shoals, Mass.; NAJJ, *read* Relief L. V. No. 86; NAVD, *read* Willmette; NAXN, *read* Kemaydin; NETQ, *read* Tutmuck; NUBG, *read* S. P. 563 (Magnet); and NUBN, *read* S. P. 411 (Susanne).

MISCELLANEOUS.

AMENDMENTS.

The Radio Laws and Regulations of the United States, edition July 27, 1914, are hereby amended as follows:

Paragraph 122, page 63, amended December 20, 1918, to read:

Amateur, first grade.—The applicant must have a sufficient knowledge of the adjustment and operation of the apparatus which he wishes to operate and of the regulations of the international convention and acts of Congress in so far as they relate to the interference with other radio communication and impose certain duties on all grades of operators. The applicant must be able to transmit and receive Continental Morse code at a speed sufficient to enable him to recognize distress calls or the official "keep-out" signals. A speed of at least 10 words per minute (5 letters to the word) must be obtained.

Paragraph 126, page 64, amended December 20, 1918, to read:

The code test shall continue for five minutes at a speed of 20 words, 12 words, and 10 words per minute, respectively; for the commercial first, second, and amateur first-grade license, 5 letters, numerals, or other characters to the word, and to qualify the applicant must receive 20, 12, and 10 words in consecutive order accurately and legibly written. Operators will not be permitted to break or interrupt while receiving or to correct or alter the transcription after it has been submitted to the examining officer.

Radio operators' examinations are held by the radio inspectors at the following ports: At the customhouse in Boston, New York, Baltimore, New Orleans, and San Francisco; Federal Building in Chicago and Detroit; 205 Citizens Bank Building, Norfolk; and 2301 L. C. Smith Building, Seattle.

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▽

Commercial land and ship stations, alphabetically by call signals

[b=ship station; c=land station]

Call signal	Name of station	Call signal	Name of station
KDYY	Cleveland Cliffs S. S. Co. vessels, general call.....b	WLN	Lehigh.....b
KFVM	Idalia.....b	WLT	Lackawanna.....b
KGG	Heceta Island, Alaska.....c	WLU	Maryland.....b
KIBC	Silverbrook.....b	WLW	Bethlehem.....b
KIZR	Winona County.....b	WLX	Steelton.....b
KUS	United Fruit S. S. Co. vessels, general call.....b	WPT	Colonel.....b
KWJ	Commercial Courier.....b	WPU	Yosemite.....b
WEB	Redman.....b	WPV	Senator.....b
WHD	Sharon, Pa.....c	WPW	Central West.....b
WLH	Saucon.....b	WPY	Cambria.....b
WLK	Lebanon.....b	WPZ	John Anderson.....b
		WQD	Beta.....b

Commercial airplane stations, alphabetically by names of stations

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Wave length	Service	Hours	Station controlled by—
Yorktown.....	KFZC.....				General Airway Service.

Broadcasting stations, alphabetically by names of States and cities

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924]

State and city	Call signal	State and city	Call signal
Arkansas: Arkadelphia.....	KFWD	Missouri:	
California:		Kirksville.....	KFVO
Sacramento.....	KFVK	St. Louis.....	KFVE
San Jose.....	KFVJ	Do.....	KFWF
Illinois:		New Jersey: Paterson.....	WODA
Chicago.....	WFKB	Pennsylvania:	
Do.....	WIBO	Elkins Park.....	WIBG
Do.....	WMBB	Harrisburg.....	WBAK
Joliet.....	WIBD	Tennessee:	
La Salle.....	WJBC	Chattanooga.....	WDOD
Kansas: Independence.....	KFVG	Knoxville.....	WNAV
Louisiana: New Orleans.....	WSMB	Washington: Vancouver.....	KFVL
Massachusetts:		West Virginia: Martinsburg.....	WIBE
Boston.....	WNAB	Wisconsin:	
New Bedford.....	WIBH	Ashland.....	WJBD
Michigan: Bay City.....	WSKC	Wheatland.....	WIBF
Minnesota: Welcome.....	KFVN		

Stations broadcasting market or weather reports, music, concerts, lectures, etc., alphabetically by call signals

Call signal	Location of station	Station operated and controlled by—	Power (watts)	Wave length	Frequency (kilocycles)
KFVE	St. Louis, Mo., 6800 Delmar Boulevard.	Film Corporation of America.	500	240	1,250
KFVG	Independence, Kans.	First Methodist Episcopal Church.	10	236	1,270
KFVJ	San Jose, Calif.	First Baptist Church.	500	226	1,330
KFVK	Sacramento, Calif.	Chamber of Commerce.	500	248	1,210
KFVL	Vancouver, Wash.	Vancouver Barracks (United States Army).	5	231	1,300
KFVN	Welcome, Minn.	Carl E. Bagley.	10	227	1,320
KFVO	Kirkville, Mo., 316 East Randolph Street.	F. M. Henry.	5	226	1,330
KFWD	Arkadelphia, Ark.	Arkansas Light & Power Co.	500	266	1,130
KFWF	St. Louis, Mo., 4030 Lindell Street.	St. Louis Truth Center.	250	214.2	1,400
WBAK	Harrisburg, Pa.	Pennsylvania State Police.	500	275	1,090
WDOD	Chattanooga, Tenn., 540 McCallie Avenue.	Chattanooga Radio Co.	50	256	1,170
WFKB	Chicago, Ill., 4536 Woodlawn Avenue.	Francis K. Bridgman.	100	217.3	1,380
WIBD	Joliet, Ill., 223 Van Buren Street.	X-L Radio Service.	50	200	1,500
WIBE	Martinsburg, W. Va., Appolo Theater.	Martinsburg Radio Broadcasting Co.	5	209.7	1,430
WIBF	Wheatland, Wis., 209 Wisconsin Street, Kenosha, Wis.	S. P. Miller Dance Activities.	50	231	1,300
WIBG	Elkins Park, Pa.	St. Paul's Protestant Episcopal Church.	50	222	1,350
WIBH	New Bedford, Mass., 55 Hillman Street.	Elite Radio Stores (James T. Moriarity).	5	209.7	1,430
WIBO	Chicago, Ill., 6310 Broadway.	Nelson Bros. (Russo and Fiorito Orchestral Exchange).	10	226	1,330
WJBC	La Salle, Ill., Second and Joliet Streets.	Hummer Furniture Co.	100	234	1,280
WJBD	Ashland, Wis.	Ashland Broadcasting Committee.	100	233	1,290
WMBB	Chicago, Ill., 6201 Cottage Grove.	Tranion Ball Room (Woodlawn Theater Co.).	500	250	1,200
WNAB	Boston, Mass.	Shepard Stores.	100	250	1,200
WNAV	Knoxville, Tenn., 313 Commerce Avenue.	Peoples Telephone & Telegraph Co.	500	233	1,290
WODA	Paterson, N. J., 115 Ellison Street.	James K. O'Dea Radio and Victrola Shop.	25	202.6	1,480
WSKC	Bay City, Mich.	World's Star Knitting Co.	50	261	1,150
WSMB	New Orleans, La., Maison Blanche Building.	Saenger Amusement & Maison Blanche Co.	500	319	940

Government land stations, alphabetically by names of stations

[Additions to the list of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Wave length	Service	Hours	Station controlled by—
Boston, Mass.	NCP	-----	O	N	U. S. Coast Guard Service.
Cape Lewes, Del.	NWE	-----	O	N	Do.
Cape May, N. J.	NCY	-----	O	N	Do.
Gloucester, Mass.	NGL	-----	O	N	Do.
New London, Conn.	NLO	-----	O	N	Do.
Rockaway Beach, N. Y.	NCG	-----	O	N	Do.

Government ship stations, alphabetically by names of stations

[Additions to the list of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations published by the Berne bureau]

Station	Call signal	Wave length	Service	Hours	Station controlled by—
CG-278.....	NACM	-----	O	X	U. S. Coast Guard Service.
CG-279.....	NAGF	-----	O	X	Do.
CG-280.....	NECL	-----	O	X	Do.
CG-281.....	NADM	-----	O	X	Do.
CG-282.....	NEGG	-----	O	X	Do.
CG-283.....	NEQN	-----	O	X	Do.
CG-284.....	NISD	-----	O	X	Do.
CG-285.....	NOCK	-----	O	X	Do.
CG-286.....	NACX	-----	O	X	Do.
CG-287.....	NAGJ	-----	O	X	Do.
CG-288.....	NECP	-----	O	X	Do.
CG-289.....	NEQR	-----	O	X	Do.
CG-290.....	NADQ	-----	O	X	Do.
CG-291.....	NAPJ	-----	O	X	Do.
CG-292.....	NEGL	-----	O	X	Do.
CG-293.....	NADG	-----	O	X	Do.
CG-294.....	NAQG	-----	O	X	Do.
CG-295.....	NEQV	-----	O	X	Do.
CG-296.....	NIVG	-----	O	X	Do.
CG-297.....	NOCP	-----	O	X	Do.
CG-298.....	NAFG	-----	O	X	Do.
CG-299.....	NAQK	-----	O	X	Do.
CG-300.....	NECQ	-----	O	X	Do.
CG-301.....	NADJ	-----	O	X	Do.
CG-302.....	NAFN	-----	O	X	Do.

NOTE.—All of the above-named Coast Guard vessels are equipped as follows: Range, 50; system, Western Electric Co. v. t. telegraph and telephone; w. l. 130,143.

Government land and ship stations, alphabetically by call signals

[b=ship station; c=land station]

Call signal	Name of station	Call signal	Name of station
NACM	CG-278.....b	NECL	CG-280.....b
NACX	CG-286.....b	NECP	CG-288.....b
NADG	CG-293.....b	NECQ	CG-300.....b
NADJ	CG-301.....b	NEGG	CG-282.....b
NADM	CG-281.....b	NEGL	CG-292.....b
NADQ	CG-290.....b	NEQN	CG-283.....b
NAFG	CG-298.....b	NEQR	CG-289.....b
NAFN	CG-302.....b	NEQV	CG-295.....b
NAGF	CG-279.....b	NGL	Gloucester, Mass.....c
NAGJ	CG-287.....b	NISD	CG-284.....b
NAPJ	CG-291.....b	NIVG	CG-296.....b
NAQG	CG-294.....b	NLO	New London, Conn.....c
NAQK	CG-299.....b	NOCK	CG-285.....b
NECQ	Rockaway Beach, N. Y.....c	NOCP	CG-287.....b
NCP	Boston, Mass.....c	NWE	Cape Lewes, Del.....c
NCY	Cape May, N. J.....c		

Special land stations, alphabetically by names of stations

[Additions to the List of Radio Stations of the United States, edition of June 30, 1924]

Station	Call signal	Station controlled by—
Batavia, Ill.....	9XB	Peoples Pulpit Assn. (Ralph H. Leffler).
Bozeman, Mont.....	7XB	Montana State College.
Bridgeport, Conn.....	IXF	George E. Nothnagle, 176 Waldemere Ave.
Hilo, Hawaii.....	6XAZ	Mutual Telephone Co.
Honolulu, Hawaii.....	6XAY	Do.
Missoula, Mont.....	7XA	University of Montana.
San Francisco, Calif.....	6XAR	Julius Brunton & Sons Co.
Seattle, Wash.....	7XZ	University of Washington.

Special land stations, grouped by districts

Call signal	District and station	Call signal	District and station
1XF	First district: Bridgeport, Conn.	7XA	Seventh district:
6XAR	Sixth district:	7XB	Missoula, Mont.
6XAY	San Francisco, Calif.	7XZ	Bozeman, Mont.
6XAZ	Honolulu, Hawaii.	9XB	Seattle, Wash.
	Hilo, Hawaii.		Ninth district: Batavia, Ill.

ALTERATIONS AND CORRECTIONS**COMMERCIAL LAND STATIONS**

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

ALLENTOWN, PA.—Range, 100; w. l., 137.
 BIRMINGPORT, ALA.—W. l., 600, 1,100, 1,800.
 BOLINAS, CALIF. (KPH).—Range, 300–1,000; system, R. C. A., 480; R. C. A., 1,000 and General Electric Co. v. t. telegraph; w. l., 600, 706, 2,200.
 BURRWOOD, LA.—Range, 300; system, composite, 1,000; w. l., 600, 675, 1,713; hours, 7 a. m.—midnight.
 CHICAGO, ILL. (WGO).—W. l., add 1,578.
 ENSENADO, P. R.—System, Navy—R. C. A., 1,000; w. l., 600, 1,800; hours, week days 7 a. m.—1 p. m., Sundays 7 a. m.—6 p. m.
 HIDDEN INLET, ALASKA.—W. l., 600, 706, 725.
 LIBBYVILLE, ALASKA.—Range, 150–300; w. l., 600, 900, 1,680, 3,300.
 MACKINAC ISLAND, MICH.—W. l., 600, 1,578.
 MEMPHIS, TENN.—W. l., 600, 1,100.
 MOBILE, ALA. (WPP).—W. l., 600, 1,100, 1,200, 1,800.
 NEW ORLEANS, LA.—W. l., add 675, strike out 1,713.
 PIRATE COVE, ALASKA.—W. l., 600, 725, 1,650.
 PORT ARTHUR, TEX. (WPA).—W. l., 600, 925, 2,050.
 PORT WALTER, ALASKA.—W. l., 600, 650; service, P.
 ROCKY POINT, N. Y.—W. l., 1,760.
 SEATTLE, WASH. (KVW).—W. l., 600, 1,874.
 TREE POINT LIGHTHOUSE STATION, ALASKA.—Read Mary Island Lighthouse, Alaska; w. l., 600, 625.
 WILMINGTON, CALIF. (KSE).—System, General Electric Co., 1,000; w. l., 600, 706.
 YAKUTAT, ALASKA.—W. l., 600, 1,641.
 Strike out all particulars of the following-named stations: Avalon, Calif.; Kus-silof, Alaska; Lost Harbor, Alaska; Oberlin, Ohio; San Francisco, Calif. (KHH); Unga, Alaska; Wilmington, Calif. (KEB).

COMMERCIAL SHIP STATIONS, ALPHABETICALLY BY NAMES OF VESSELS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

ADLER.—Station operated and controlled by R. C. A.
 ADMIRAL FISKE.—W. l., 600, 706, 800.
 ADMIRAL ROGERS.—W. l., 600, 706.
 AGWISTONE.—W. l., 450, 600, 706, 800.
 ALADDIN.—System, R. C. A., 1,000; w. l., 450, 600, 706, 800.
 A. L. KENT.—W. l., 600, 706, 800.
 ALPHA.—Range, 300; w. l., 600, 706, 800.
 A. M. SCOTT.—Range, 300; system, Navy-Lowenstein, 1,000; w. l., 600, 1,100; station operated and controlled by Inland Waterways Corp. (Mississippi War-rrior Service).
 ANDREA F. LUCKENBACH.—Station operated and controlled by R. C. A.
 APEX.—W. l., 600, 706, 800.
 ARDMORE.—System, I. W. T. Co., 1,000; w. l., 600, 706, 800, 2,100, 2,400.
 BAKERSFIELD.—W. l., 600, 706, 800; station operated and controlled by I. W. T. Co.
 BARBARA C.—W. l., 600, 706, 800.
 BAYWAY.—W. l., 450, 600, 706, 800.
 BELLHAVEN.—W. l., 450, 600, 706, 800; hours, X.
 BETHELBRIDGE.—Malacca S. S. Co., owner of vessel.

- BRIDGETOWN.—W. l., 600, 706, 800.
 CALAWAIL.—W. l., 600, 706, 800, 2,100, 2,400.
 CALVIN AUSTIN.—W. l., 600, 706, 800.
 CAMBRIDGE.—W. l., add 875.
 CAMDEN (KRC).—W. l., 600, 706, 800.
 CANANOVA.—W. l., 600, 706, 800.
 CAPTAIN A. F. LUCAS.—W. l., 600, 706, 800.
 CAROLYN FRANCES.—Name changed to *Charles Brower*.
 CARRABULLE.—W. l., 600, 706, 800.
 CARRILLO.—W. l., 600, 706, 800.
 CASEY.—Station operated and controlled by I. W. T. Co.
 CATHLAMET.—Station operated and controlled by I. W. T. Co.
 CHARLES R. McCORMICK.—W. l., 600, 706, 800.
 CHILKAT.—W. l., 600, 706.
 CITY OF ATLANTA.—W. l., 600, 706, 800.
 CLARE.—Range, 150; w. l., 600, 706, 800.
 CONCORD.—W. l., add 875.
 CROSS KEYS.—W. l., 450, 60, 706, 800, 875.
 CUBA (KDLK).—Range, 300; system, R. C. A., 1,000; w. l., 600, 706, 800.
 D. G. SCOFIELD.—W. l., 600, 706, 800, 1,800.
 DOROTHY LUCKENBACH.—Station operated and controlled by R. C. A.
 ECLIPSE.—W. l., 450, 600, 706, 800.
 EDGAR F. LUCKENBACH.—W. l., 600, 706, 800; station operated and controlled by R. C. A.
 EDWARD LUCKENBACH.—Station operated and controlled by R. C. A.
 EVERGREEN CITY.—W. l., 600, 706, 800.
 F. J. LUCKENBACH.—Station operated and controlled by R. C. A.
 FLORENCE LUCKENBACH.—Station operated and controlled by R. C. A.
 GLENPOOL.—W. l., 450, 600, 706, 800.
 GOVERNOR DINGLEY.—W. l., 600, 706, 800.
 GRATIA.—Vezino de Vezino, owner of vessel.
 HARRY LUCKENBACH.—Station operated and controlled by R. C. A.
 H. H. ROGERS.—W. l., 450, 600, 706, 800.
 HORACE LUCKENBACH.—Station operated and controlled by R. C. A.
 INDIAN.—W. l., 600, 706, 800.
 JACOB LUCKENBACH.—Station operated and controlled by R. C. A.
 J. L. LUCKENBACH.—Station operated and controlled by R. C. A.
 JOHN A. KLING.—Station operated and controlled by R. C. A.
 JOHN W. BOARDMAN.—W. l., add 1,790.
 JONANCY.—System, R. C. A. v. t. telegraph; w. l., 600, 706, 800, 875.
 JULIA LUCKENBACH.—Station operated and controlled by R. C. A.
 KATRINA LUCKENBACH.—Station operated and controlled by R. C. A.
 K. I. LUCKENBACH.—Station operated and controlled by R. C. A.
 KISHACOQUILLAS.—W. l., 600, 706, 800.
 LAKE FARISTELL.—Name changed to *King*; King S. S. Corporation owner of vessel.
 LAKE FLOVILLA.—Name changed to *Queen*; Queen S. S. Corporation owner of vessel.
 LAKE FRESCO.—Name changed to *Jack*; Jack S. S. Corporation owner of vessel.
 LAKE FROHNA.—Name changed to *Ace*; Ace S. S. Corporation owner of vessel.
 LAKE HARMINIA.—Name changed to *Ethyl*; E. I. du Pont de Nemours & Co. owner of vessel.
 LENA LUCKENBACH.—Station operated and controlled by R. C. A.
 LEWIS LUCKENBACH.—Station operated and controlled by R. C. A.
 LIBBY MAINE.—W. l., 600, 706, 800; station operated and controlled by owner of vessel.
 LIEUT. COL. ROBERT G. GILDART.—W. l., 600, 1,100; Inland Waterways Corporation owner of vessel (Mississippi-Warrior service).
 LILLIAN LUCKENBACH.—Station operated and controlled by R. C. A.
 MAJOR WHEELER.—W. l., add 450.
 MARY LUCKENBACH.—W. l., 450, 600, 706, 800.
 MOHEGAN.—W. l., add 875.
 MOJAVE.—W. l., 600, 706, 800, 2,100, 2,400.
 MOSELLA.—W. l., 600, 706, 2,100, 2,400.
 MUNAIRES.—W. l., 600, 706, 800.
 MUNALBRO.—W. l., 600, 706, 800.
 NATIRAR.—Station operated and controlled by I. W. T. Co.
 NEW HAMPSHIRE.—W. l., add 875.
 OGONTZ.—W. l., 450, 600, 706, 800, 875.

ONEIDA (KESJ).—W. l., 600, 706, 800; station operated and controlled by owner of vessel.
 ORIENT.—Oriental Navigation Co. owner of vessel.
 ORINOCO.—Oriental Navigation Co. owner of vessel.
 OSAGE.—W. l., 600, 706, 800.
 OZARK.—Station operated and controlled by I. W. T. Co. (U. S. L.).
 PAUL LUCKENBACH.—Station operated and controlled by R. C. A.
 PRESIDENT HARDING.—System, add Federal arc; w. l., 600, 706, 800, 1,800, 2,100, 2,400.
 PROVIDENCE.—W. l., add 875.
 REDWOOD.—System, R. C. A., 1,000; w. l., 600, 706, 800.
 ROBERT LUCKENBACH.—Station operated and controlled by R. C. A.
 ROBIN GOODFELLOW.—Station operated and controlled by I. W. T. Co.
 ROCHESTER.—W. l., 450, 600, 706, 800.
 SAN LORENZO.—W. l., 600, 706, 800.
 SANTA CECILIA.—W. l., 450, 600, 706, 800.
 SANTA OLIVIA.—W. l., add 875.
 SANTA ROSA.—W. l., 600, 706, 800.
 S. O. Co. No. 95.—Range, 150; system, R. C. A., 1,000; w. l., 600, 706, 800.
 SOCONY 88.—W. l., 600, 800.
 SOUTHLANDS.—Station operated and controlled by I. W. T. Co.
 STANDTUG No. 1.—Name changed to *Satoco*.
 STAR OF HOLLAND.—System, Navy-Lowenstein, 1,000; w. l., 600, 706, 800; rates, 8 cents per word.
 STAR OF ITALY.—W. l., 600, 706, 800.
 STEELMOTOR.—W. l., 600, 706; rates, Great Lakes service 4 cents per word, other services 8 cents per word; station operated and controlled by R. C. A.
 STEELVENDOR.—W. l., 600, 706; rates, Great Lakes service 4 cents per word, other services 8 cents per word; station operated and controlled by R. C. A.
 TIVIES.—W. l., 600, 706, 800.
 TOPA TOPA.—Station operated and controlled by I. W. T. Co.
 TUSITALA.—Station operated and controlled by R. C. A.
 WALTER A. LUCKENBACH.—Station operated and controlled by R. C. A.
 WILDWOOD.—W. l., 600, 706, 800.
 WILLIAM ISOM.—W. l., 600, 706, 800.
 W. M. TUPPER.—Range, 200; system, I. W. T. Co., 1,000; w. l., 600, 706, 800; rates, 8 cents per word.
 W. S. MILLER.—W. l., 600, 706, 800; S. O. Co. of Calif. owner of vessel.
 Strike out all particulars of the following-named vessels: Osprey, Rappahannock, Robert B. Wallace, W. S. Porter.

COMMERCIAL LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS

KEGR, *read Ace*; KESK, *read Queen*; KFHO, *read Charles Brower*; KJJ, *read Mary Island Lighthouse, Alaska*; KOQM, *read Satoco*; KUNB, *read Ethyl*; WLEE, *read King*; WNAU, *read Jack*; strike out all particulars following the call signals, KDA, KEB, KHH, KKAQ, KUJN, KVI, KWS, WEI, WLK, WQQ, WTM.

BROADCASTING STATIONS, BY CALL SIGNALS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1924]

KDLR (Devils Lake, N. Dak.).—Station operated and controlled by Radio Electric Co. and Wilson Insurance Agency.
 KFAB (Lincoln, Nebr.).—Power, 500.
 KFAD (Phoenix, Ariz.).—Power, 100; w. l., 273, fy. kc., 1,100.
 KFBC (San Diego, Calif.).—Power, 10; w. l., 224, fy. kc., 1,340.
 KFDZ (Minneapolis, Minn.).—Power, 10.
 KPEL (Denver, Colo.).—Station operated and controlled by W. L. Winner Radio Shop, 435 Fourteenth Street.
 KFGD (Chickasha, Okla.).—Power, 200.
 KFKX (Hastings, Nebr.).—Power, 2,000.
 KFOO (Salt Lake City, Utah).—Power, 250.
 LFON (Long Beach, Calif.).—W. l., 233, fy. kc., 1,290.
 KFOA (St. Louis, Mo.).—Power, 100.
 KFOB (Fort Worth, Tex.).—Power, 150.
 KFQU (Holy City, Calif.).—W. l., 222, fy. kc., 1,350.
 KFSG (Los Angeles, Calif.).—W. l., 275, fy. kc., 1,090.
 KFUU (San Leandro, Calif.).—Power, 50.

KFUR (Ogden, Utah).—Station operated and controlled by Peery Building Co.
KFUS (Oakland, Calif.).—W. l., 234, fy. kc., 1,280.
KFVF (Hollywood, Calif.).—Power, 50.
KGU (Honolulu, Hawaii).—W. l., 270, fy. kc., 1,110.
KGY (Lacey, Wash.).—Fy. kc., 1,220.
KMJ (Fresno, Calif.).—Address, Tuolumne and Fulton Streets.
KMO (Tacoma, Wash.).—Power, 100.
KOA (Denver, Colo.).—Power, 2,000.
KQW (San Jose, Calif.).—W. l., 226, fy. kc., 1,330.
KWG (Stockton, Calif.).—W. l., 248, fy. kc., 1,210.
KZM (Oakland, Calif.).—W. l., 242, fy.-kc., 1,240.
WABA (Lake Forest, Ill.).—Power, 200.
WABZ (New Orleans, La.).—W. l., 275, fy. kc., 1,090.
WAAB (New Orleans, La.).—W. l., 268, fy. kc., 1,120.
WBAK (Harrisburg, Pa.).—W. l., 202.3, fy. kc., 1,199.
WBBG (Mattapoisett, Mass.).—Power, 250.
WBZ (Springfield, Mass.).—Power, 2,000.
WCAJ (University Place, Nebr.).—W. l., 254, fy. kc., 1,180.
WCAO (Baltimore, Md.).—Power, 100.
WCBZ (Chicago Heights, Ill.).—Station operated and controlled by Neuro-
 wound Radio Manufacturing Co., 1721 Prairie Avenue; w. l., 217.3, fy. kc.,
 1,380.
WDBS (Dayton, Ohio).—Call sinal changed to WSMK; power, 500.
WDBZ (Kingston, N. Y.).—Power, 10.
WEAA (Flint, Mich.).—Power, 100.
WEAF (New York, N. Y.).—Power, 2,500.
WEAN (Providence, R. I.).—Power, 250.
WEAY (Houston, Tex.).—W. l., 270, fy. kc., 1,110.
WEBQ (Harrisburg, Ill.).—Station operated and controlled by Joseph R. Tate.
WENR (Chicago, Ill.).—Power, 10; w. l., 266, fy. kc., 1,130.
WFBZ (Galesburg, Ill.).—Power, 20.
WGAQ (Shreveport, La.).—Power, 250; w. l., 273, fy. kc., 1,100.
WGBF (Evansville, Ind.).—W. l., 236, fy. kc., 1,270.
WGBS (New York, N. Y.).—Power, 500.
WGBY (New Lebanon, Ohio).—W. l., 250, fy. kc., 1,200.
WGY (Schenectady, N. Y.).—Power, 2,000.
WHA (Madison, Wis.).—Power, 750.
WHK (Cleveland, Ohio).—Power, 250.
WHAP (Brooklyn, N. Y.).—Power, 100.
WKAR (East Lansing, Mich.).—Power, 750.
WLW (Harrison, Ohio).—Power, 500-5,000.
WOC (Davenport, Iowa).—Power, 2,000.
WOAI (San Antonio, Tex.).—Power, 1,000.
WORD (Batavia, Ill.).—Power, 2,000; w. l., 275, fy. kc., 1,090.
WRC (Washington, D. C.).—Power, 1,000.
WSAI (Cincinnati, Ohio).—Changed to Mason, Ohio; power, 500-5,000.
WSB (Atlanta, Ga.).—Power, 500.
WTAF (New Orleans, La.).—Call signal changed to WOWL, station operated
 and controlled by Owl Battery Co.; power, 100; w. l., 270, fy. kc., 1,110.
WTAY (Oak Park, Ill.).—Call signal changed to WGES; station operated and
 controlled by Coyne Electrical School.
WWAO (Houghton, Mich.).—W. l., 263, fy. kc., 1,140.
 Strike out all particulars of the following-named stations: **KFCL** (Los Angeles,
 Calif.); **KFFR** (Sparks, Nev.); **KFGX** (Orange, Tex.); **KFHJ** (Santa
 Barbara, Calif.); **KFPH** (Salt Lake City, Utah); **KFPX** (Pine Bluff, Ark.);
KFQM (Austin, Tex.); **KFRF** (Alexandria, La.); **KFRN** (Hanford, Calif.);
KFUW (Moberly, Mo.); **KJQ** (Stockton, Calif.); **KYQ** (Honolulu, Hawaii);
WBAN (Paterson, N. J.); **WBBH** (Port Huron, Mich.); **WDBD** (Martins-
 burg, W. Va.); **WDBT** (Hattiesburg, Miss.); **WEAP** (Mobile, Ala.); **WEBY**
 (Roslindale, Mass.); **WFBT** (Pitman, N. J.); **WHBE** (Sewickley, Pa.);
WOAF (Tyler, Tex.).

GOVERNMENT LAND STATIONS, ALPHABETICALLY BY NAMES OF STATIONS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

CAVITE, P. I.—Service, O.

ST. JOHN, VIRGIN ISLANDS.—W. l., 1,684 should be in italics.

SAN FRANCISCO, CALIF. (NPG).—W. l., add 2,607, strike out 1,333.

GOVERNMENT SHIP STATIONS, ALPHABETICALLY BY NAMES OF STATIONS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1924, and to the International List of Radiotelegraph Stations, published by the Berne bureau]

Strike out all particulars of the following-named vessels: *Comfort, Delaware, Newport News, Pensacola, S. C. 156, S. C. 188, S. C. 191, S. C. 287, Traffic.*

GOVERNMENT LAND AND SHIP STATIONS, ALPHABETICALLY BY CALL SIGNALS

Strike out all particulars following the call signals, *NDO, NEK, NGN, NHZ, NOLF, NOMJ, NOMM, NOSQ, NVA.*

SPECIAL LAND STATIONS, BY NAMES OF STATIONS

[Alterations and corrections to be made to the List of Radio Stations of the United States, edition of June 30, 1924]

SAN JOSE, CALIF. (portable, 6XE).—Station operated and controlled by Charles D. Herrold and Ray Newby, 1065 Bird Avenue.

SAN JOSE, CALIF. (6XF).—Station operated and controlled by Charles D. Herrold and Ray Newby, 1065 Bird Avenue.

SILVER LANE, CONN. (1XAQ).—Changed to Glastonbury, Conn., 122 Naubuc Avenue.

Strike out all particulars of the following-named stations: *Bozeman, Mont. (7XBC); Cedar Rapids, Iowa (9XBK); Columbia, Mo. (9XBQ); Davenport, Iowa (9XG); Seattle, Wash. (7YM); Wooster, Ohio (8XI).*

MISCELLANEOUS

USE OF 300 AND 450 METERS

Radio stations of the United States are no longer being licensed to use 300 and 450 meters, except broadcasting stations. The 450-meter wave may be used, however, by ship stations in communicating with foreign compass stations. Foreign ship stations should not attempt to communicate with stations of this country on either the 300 or 450 meter wave length.

INCREASE IN TELEGRAPHIC RATES FOR CYRENAICA, ERITREA, AND TRIPOLI

The interior telegraphic rates applicable to radiograms for these countries has been raised to 1 franc 25 centimes per word (minimum 2 francs), for ordinary radiograms and 2 francs 75 centimes per word (minimum 6 francs), for urgent radiograms.

INCREASE IN TELEGRAPHIC RATES FOR ITALY

The interior telegraphic rates applicable to radiograms for this country has been increased to 1 franc 25 centimes per word (minimum 2 francs), for ordinary radiograms and 2 francs 75 centimes per word (minimum 6 francs), for urgent radiograms, effective since March 16, 1925.

GULF OF ST. LAWRENCE ICE PATROL

An ice patrol will be maintained in the Gulf of St. Lawrence from Cape Ray to Bird Rocks, Bird Rocks to vicinity of Heath Point, and Heath Point to Cape Ray from the opening of navigation in the spring until the route is clear of ice. Call letters VCQ have been assigned to the ice patrol vessel. This is a special call signal and will be used by any vessel which is engaged in the service.

A regular message embodying ice conditions, from Cape Race to Quebec, and recommendations as to route to be followed will be made up by the ice patrol every four hours, commencing as from midnight eastern standard time (seventy-fifth meridian), and kept on file for immediate transmission by radio to ships, upon request. This information will also be broadcast four times daily by the ice patrol at 8 a. m. and 8 p. m. on 600 meters, spark, and at 8.30 a. m. and 8.30 p. m. on 1,621 meters, i. c. w. The coast radio stations at Cape Race (VCE), North Sydney (VCO), and Grindstone (VCN) will copy this message and will be prepared to pass the same to ships requesting it. Cape Race will also include the message in his regular ice broadcast at 9.15 a. m. and 9.15 p. m. daily. Ships requiring the latest information on the Gulf route should communicate directly with the ice patrol vessel (VCQ) on 600 meters, spark. The work will be greatly facilitated if incoming ships will cooperate in supplying information regarding ice in their vicinity.—*Notice to Mariners, Hydrographic Office, No. 16.*

COMPASS STATION ESTABLISHED AT BOMBAY HARBOR

It has been reported by the master of the American vessel *Jalapa* that a radio compass station has been temporarily established on Butcher Island, Bombay Harbor, in latitude 18° 57' 31" N., longitude 72° 54' 13" E. This station is established for experimental purposes, and vessels entering the port of Bombay are urged to assist in the experimental work by obtaining bearings, for which no charge is made. Call letters have not been assigned to the station, but the island can be raised by first calling VWB, Bombay. Masters of vessels are requested to forward in writing their true position at the time bearings are taken to the officer in charge, Bombay Radio, Butcher Island, Bombay.—*Notice to Mariners, Hydrographic Office, No. 16.*

WAVE LENGTH USED BY TUCKERTON FOR TRANSMITTING WEATHER REPORTS

The station of the Radio Corporation of America at Tuckerton, N. J., uses 650 meters, i. c. w., for transmitting weather reports. For further information in this regard see Radio Service Bulletin for last month, No. 96.

GOVERNMENT AND COMMERCIAL TRAFFIC BETWEEN VENEZUELAN STATION AND PORTO RICAN STATION

Beginning midnight, May 1, this year, a radio circuit will be inaugurated between the naval radio station at San Juan, P. R., and the Venezuelan radio station at Caracas, Venezuela, for the handling of Government and commercial dispatches between the United States and Venezuela.

Official dispatches of the Government of Venezuela and of the Government of the United States will be handled free of charge between San Juan, P. R., and Caracas, Venezuela. Government dispatches destined to other points within the United States or Venezuela will carry the appropriate land line or cable charges from the two points before mentioned.

The total rate on commercial dispatches between Caracas, Venezuela, and San Juan, P. R., is 24 cents per word, United States currency, 12 cents accruing to each station as its proportion. The charges for local delivery on such dispatches will be paid by the radio administration of destination from its proportion of the above-mentioned rate. The rates for commercial dispatches between other points in the United States and Venezuela will be those of the commercial land lines or cable between the point of origin in the United States and San Juan, P. R., plus the rate of 24 cents per word above mentioned, plus the rates of the land lines from the Venezuelan radio station at Caracas to destination, or vice versa.

DISTRIBUTION OF WEATHER INFORMATION, FORECASTS, AND WARNINGS BY RADIO FOR THE BENEFIT OF NAVIGATION ON GREAT LAKES

Weather forecasts and information for such States as are contiguous to the Great Lakes, and forecasts and warnings for the Great Lakes, are broadcast by radio from a number of broadcasting stations cooperating with the United States Weather Bureau. The broadcasts of weather forecasts, warnings, and other pertinent information have been arranged so as to be of special benefit to navigation and shipping interests of the Great Lakes region and are made daily, except as noted, from stations at important Lake ports. The daily forecasts of wind and weather are made separately for the upper and lower Lakes and are broadcast accordingly, as indicated in the following schedules:

Broadcasting stations and schedules

DULUTH, MINN.:

Station WME.—Intercity Radio Telegraph Co.
Radiotelegraph; wave length, 600 meters, spark.
11 a. m. and 5 p. m., seventy-fifth meridian time.
Forecasts for the upper Lakes.
Storm warnings whenever issued.

HOUGHTON, MICH.:

Station WWAO.—The Michigan College of Mines.
Radiophone; wave length, 263 meters, 250 watts.
12 noon, seventy-fifth meridian time.¹
Forecasts for Upper Michigan (State) and Houghton.
Storm warnings whenever issued.

¹ Daily except Sundays and holidays.

MILWAUKEE, WIS.:

Station WCAY.—Milwaukee Civic Broadcasting Association.

Radiophone; wave length, 266 meters, 250 watts.

12.15 p. m., seventy-fifth meridian time.

Forecasts for Wisconsin and upper Lakes.

Storm warnings whenever issued.

NOTE.—Broadcasts made only Mondays, Wednesdays, and Fridays.

Station WHAD.—The Marquette University.

Radiophone; wave length, 275 meters, 500 watts.

12 noon, seventy-fifth meridian time.¹

Forecasts for Wisconsin and Milwaukee.

Forecasts for the upper Lakes.

Storm warnings whenever issued.

GREAT LAKES, ILL.:

Station NAJ.—United States Navy.

Radiotelegraph; wave length, 1,986 meters, i. c. w.

10.45 a. m. and 11 p. m., seventy-fifth meridian time.

Forecasts for upper and lower Lakes.

Storm warnings whenever issued.

Storm warnings issued in the afternoon are broadcast at 5 p. m., seventy-fifth meridian time.

CHICAGO, ILL.:

Station WGO.—Radio Corporation of America.

Radiotelegraph; wave length, 890 meters, c. w.

12 noon, 5 p. m., and 10 p. m., seventy-fifth meridian time.

Forecasts for Chicago and vicinity.

Forecasts for the upper and lower Lakes.

Storm and small craft warnings whenever issued.

Station KYW.—Westinghouse Electric & Manufacturing Co.

Radiophone; wave length, 535.4 meters, 1,500 watts.

1 p. m. and 11.30 p. m., seventy-fifth meridian time (except Monday nights).¹

Forecasts for Illinois, Indiana, Wisconsin, Minnesota, and Upper and Lower Michigan (State).

Forecasts for Lake Michigan.

Storm warnings whenever issued.

Station WAAF.—The Daily Drovers Journal.

Radiophone; wave length, 278 meters, 200 watts.

11.30 a. m. and 1.30 p. m., seventy-fifth meridian time.¹

Forecasts for Illinois, Indiana, Wisconsin, Minnesota, and Upper and Lower Michigan (State).

Forecasts for upper and lower Lakes.

Aviation forecasts for the zones 4 and 8.

General forecast and summary of weather conditions.

Storm warnings whenever issued.

Station WLS.—Sears, Roebuck & Co.

Radiophone, wave length, 344.6 meters, 500 watts.

10 a. m. and 7 p. m., seventy-fifth meridian time.¹

Repeated at 1.30 p. m. and 2 p. m. on Saturdays.

Forecasts for Chicago, Illinois, Indiana, Wisconsin, Minnesota, upper and lower Michigan (State), and general weather forecast.

Storm warnings whenever issued.

ROGERS, MICH.:

Station WLC.—The Michigan Limestone & Chemical Co.

Radiotelegraph; wave length, 670 meters, spark and c. w.

8.45 a. m., seventy-fifth meridian time: State of weather and wind direction and velocity at Mackinaw, Middle Island, Alpena, Tawas Point, Harbor Beach, and Port Huron; barometric pressure at Alpena and Port Huron.

10.45 a. m. and 10.30 p. m., seventy-fifth meridian time: Weather forecast for Upper lakes; storm and advisory warnings whenever issued.

¹ Daily except Sundays and holidays.

ROGERS, MICH.:—Continued.

4.45 p. m. and 8.45 p. m., seventy-fifth meridian time: State of weather and wind direction and velocity at 4 and 8 p. m., respectively, at Middle Island and Alpena; storm and advisory warnings whenever issued.

NOTE.—Information concerning condition of sea along the west shore of Lake Huron and currents and fluctuations of water level in Lake Huron will be included in the broadcasts whenever the weather is thick.

DETROIT, MICH.:

Station WCX.—The Detroit Free Press.

Radiophone; wave length, 516.9 meters, 500 watts.

10.15 a. m. and 2.50 p. m., seventy-fifth meridian time.¹

Forecasts for lower Michigan (State) and Detroit.

Forecasts for the upper and lower Lakes.

Summary of weather conditions.

Storm warnings whenever issued.

Station WWJ.—The Detroit Evening News.

Radiophone; wave length, 352.7 meters, 500 watts.

11.25 a. m. and 4.30 p. m., seventy-fifth meridian time.¹

Forecasts for lower Michigan (State) and Detroit.

Forecasts for the upper and lower Lakes.

Summary of weather conditions.

Storm warnings whenever issued.

CLEVELAND, OHIO:

Station WEAR.—Goodyear Tire & Rubber Co.

Radiophone; wave length 389.4 meters, 1,000 watts.

12 noon and 4 p. m., seventy-fifth meridian time.¹

Barometric pressure, state of weather, and wind direction and velocity at 8 a. m. at Cleveland, Toledo, and Erie.

Forecasts for Ohio and Cleveland.

Forecasts for the lower and upper Lakes.

Summary of weather conditions.

Storm warnings whenever issued.

Station WTK.—Intercity Radio Telegraph Co.

Radiotelegraph; wave length, 730 meters, spark and i. c. w.

11.05 a. m. and 4 p. m., seventy-fifth meridian time.

Barometric pressure, state of weather, and wind direction and velocity at 8 a. m. at Cleveland, Toledo, and Erie.

Forecasts for the lower and upper Lakes.

Summary of weather conditions.

Storm warnings for Lake Erie and advisory messages for the Great Lakes whenever issued.

BUFFALO, N. Y.:

Station WAM.—Intercity Radio Telegraph Co.

Radiotelegraph; wave length, 600, 730, and 1,800 meters, spark and i. c. w.

10.45 a. m. and 9 p. m., seventy-fifth meridian time.

Barometric pressure, state of weather, and wind direction and velocity at 8 a. m. and 8 p. m., respectively, at Buffalo and Oswego.

Forecasts for the lower Lakes (10.45 a. m. only).

Storm warnings whenever issued.

Station WGR.—Federal Telephone Manufacturing Corporation.

Radiophone; wave length, 319 meters, 750 watts.

12 noon, seventy-fifth meridian time.¹

Forecasts for Buffalo and western New York.

—From Weather Bureau Forecast Division.

NOTE.—This circular supersedes circular dated June 1, 1924.

STANDARD FREQUENCY STATIONS

As a result of measurements by the Bureau of Standards upon the transmitted waves of a limited number of radio transmitting stations, data are given in each month's Radio Service Bulletin on such of these stations as have been found to maintain a sufficiently constant frequency to be useful as frequency standards. There may be many other stations maintaining their frequency just as constant as these, but these are the only ones among those observed. There is, of course,

¹ Daily except Sundays and holidays.

no actual guaranty that the stations named below will maintain the constancy shown, but this indicates the high degree of confidence that can be placed in them. The transmitted frequencies from these stations can be utilized for standardizing frequency meters and other apparatus by the procedure given in Bureau of Standards Letter Circular No. 92, Radio Signals of Standard Frequencies and Their Utilization. A copy of that letter circular can be obtained by a person having actual use for it upon application to the Bureau of Standards, Department of Commerce, Washington, D. C.

Station	Owner	Location	Assigned frequency (kilocycles)	Period covered by measurements (months)	Number of times measured	Deviations from assigned frequencies noted in measurements	
						Average	Greatest since Mar. 20, 1925
WQL	Radio Corporation of America.	Coram Hill, Long Island, N. Y.	17.13	4	31	Per ct. 0.1	Per ct. 0.2
NSS	United States Navy	Annapolis, Md.	17.50	20	156	.2	.6
WCI	Radio Corporation of America.	Barnegat, N. J.	17.95	2	13	.2	.3
WGG	do	Tuckerton No. 1, N. J.	18.86	20	159	.1	.4
WSO	do	Marion, Mass.	25.80	20	122	.3	.2
WVA	United States Army	Annapolis, Md.	100	1	20	.1	.4
WEAF	American Telegraph & Telephone Co.	New York, N. Y.	610	4	45	.0	.0
WCAP	Chesapeake & Potomac Telephone Co.	Washington, D. C.	640	19	87	.1	.2
WRC	Radio Corporation of America.	do	640	16	69	.1	.2
WSB	Atlanta Journal	Atlanta, Ga.	700	19	73	.1	.4
WGY	General Electric Co.	Schenectady, N. Y.	790	22	124	.1	.2
WBZ	Westinghouse Electric & Manufacturing Co.	Springfield, Mass.	900	12	35	.1	.4
KDKA	do	East Pittsburgh, Pa.	970	19	158	.1	.3

REFERENCES TO CURRENT RADIO PERIODICAL LITERATURE

This is a monthly list of references prepared by the radio laboratory of the Bureau of Standards and is intended to cover the more important papers of interest to the professional radio engineer which have recently appeared in technical periodicals. The number at the left of each reference classifies the reference by subject, in accordance with the scheme presented in A Decimal Classification of Radio Subjects—An Extension of the Dewey System, Circular No. 138, a copy of which may be obtained for 10 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C. Further information about these lists, availabilities of previous lists, and of the several periodicals is contained in the extended statement preceding the early lists and published in the Radio Service Bulletin prior to April, 1923, and also in May and September, 1923.

R000.—Radio communication

- R000 Harrison, H. H. The art of communication engineering (abstract). Jour. Inst. of Elec. Engrs. (London), **63**, pp. 305-308, March, 1925.
 R007.1 McBride, R. S. How the Government is regulating radio broadcasting. Radio Broadcast, **7**, pp. 29-35, May, 1925.
 R020 Gernsback, S. Radio review. Published by Consrad Co. (Inc.), New York, N. Y. Price, \$0.35 per copy.

R100.—Radio principles

- R113 Appleton, E. V., and Barnett, M. A. F. Wireless wave propagation. Electrician (London), **94**, p. 398, April 3, 1925.
 R113 Howe, G. W. O. Facts and fancies in long-distance transmission. Electrician (London), **94**, p. 298, March 13, 1925.
 R113.5 Van Clee, E. Do weather conditions influence radio? Radio Broadcast, **7**, pp. 90-94, May, 1925.
 R113.6 Reinartz, J. L. The reflection of short waves. QST, **9**, pp. 9-12, April, 1925.
 R113.8 Merritt, E., Bidwell, C. C., and Reich, H. J. Changes observed in the direction of radio signals at the time of the eclipse of January 24, 1925. Jour. Frank. Inst., **199**, pp. 485-492, April, 1925.
 R113.8 Eclipse tests. QST, **9**, pp. 24-29, April, 1925.
 R125.6 White, R. H. The wireless beam. Wireless World and Radio Review, **16**, pp. 178-180, March 18; pp. 231-233, March 25, 1925.

- R127 Lodge, O. Factors that affect antenna capacity. Popular Radio, 7, pp. 422-425, May, 1925.
 R127 Van der Pol, B. Discussion on "On the radiation resistance of a single vertical antenna at wave lengths below the fundamental" and "On the optimum transmitting wave length for a vertical antenna over perfect earth," by S. Ballantine. Proc. Inst. Radio Engrs., 13, pp. 251-255, April, 1925.
 R129 Mauborgne, J. O., and Hill, G. Antenna system. United States Patent No. 1530684, issued March 24, 1925.
 R130 Gossling, B. S., and Thompson, M. The development of valves for wireless. World Power (London), 2, pp. 195-203, April, 1925.
 R131 Everitt, H. W. Testing vacuum tubes. United States Patent No. 1530988, issued March 24, 1925.
 R132 Kafka, H. Die Leitwertdiagramme des Elektronenröhrenverstärkers im Wechselstromkreis. Archiv für Elektrotechnik, 14, pp. 347-354, 1925.
 R134.8 Nichols, E. C. Reflex circuits. Radio (San Francisco), 7, pp. 16-18, April, 1925.
 R144 Pedersen, P. O. An electrometer method for the measurement of radio frequency resistance. Proc. Inst. Radio Engrs., 13, pp. 215-243, April, 1925.

R200.—Radio measurements and standardization

- R213 Hund, A. A method of measuring radio frequency by means of a harmonic generator. Proc. Inst. Radio Engrs., 13, pp. 207-214, April, 1925.
 R230 Sargent, E. M. A short cut in calculating inductance (chart of values for single layer coils). Radio (San Francisco), 7, pp. 34-36, April, 1925.
 R230 Davis, H. S. How to design radio coils (table). Radio Broadcast, 7, pp. 46-48, May, 1925.
 R270 Austin, L. W. Some trans-Pacific radio field intensity measurements. Proc. Inst. Radio Engrs., 13, pp. 151-157, April, 1925.
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